The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXVI, No. 3 CHICAGO, ILLINOIS JANUARY 15, 1916

VESICULOTOMY AND VESICULECTOMY

LOUIS E. SCHMIDT, M.D.

CHICAGO

The indications for surgical attack on the seminal vesicles still remain uncertain. In the past few years, however, much has been accomplished toward a more thorough understanding, and it appears that more or less definite results following operative interference will permit of establishing strict indications and contraindications. Fuller is given credit for insisting on the drainage and perfecting a direct method of procedure for drainage of the vesicles. At the same time he has established his views as to the character of cases in which operation should be performed. Belfield, who has done more than any one else to point out the conditions arising from diseases of the vesicles, must be equally recognized as a pioneer in this field. He has demonstrated a method of draining the vesicles without directly attacking them, in contradistinction to all other methods used with this purpose in view.

On account of anatomicopathologic conditions, it may be that vasotomy, even when correctly carried out, may not always be beneficial whenever performed. But on account of its simplicity and the magnitude of the direct attack on the vesicles, and also on account of its uncertainty, it should always be considered in all of those cases except those in which it can be ruled out as inefficient at the time of examination. It is needless to state that vesiculotomy is not always successful as regards results, and for this reason complete removal, or vesiculectomy, has been advised in selected cases.

Tuberculosis of the seminal vesicles caused attention to be drawn to these organs, and operative procedures were developed. Only thirty-five years have elapsed since the first vesicles were removed. During this time, operations were rather few in number. Occasionally some surgeon would become enthusiastic and describe wonderful results, but operations for this condition never became recognized as a necessity. We owe to Fuller and Belfield, above all others, our knowledge as regards the gonorrheal inflammation of the vesicles, and particularly their surgical treatment. Although the anatomy and physiology of the vesicles have received much attention, it may be said that only recently has the anatomy been thoroughly described. Picker has shown the anatomy to be variable — that the tubes may be twisted or straight with or without diverticula, and furthermore that many anomalous conditions are not uncommon.

The pathology of these gonorrheal or secondarily involved organs must be similar to that of other organs which are similar in structure. Naturally problems concerning the character of the involving organism, whether it is of low or great virulence, whether the course is acute or chronic, whether or not there is occlusion of the ejaculatory duct, whether or not there is formation of sterile pus or involvement of other parts, and many other problems arise. Squier reports calculi in the vesicles in a large percentage of cases. I have always believed that the prostate is usually, but not necessarily, involved in the course of gonorrhea. If the inflammatory process surrounds and causes obstruction to the outlet of the semen, infection easily gains access to an organ thus prepared. It may be that no infection takes place at once, but that the occlusion is complete and that calculi will easily develop. Of course it may be that infection then takes place, or the reverse and stone formation follows. If this is true, and there scarcely can be any doubt that infection of the seminal vesicle permits of systemic infection, this focus should always be considered. I believe the importance of this distributing focus has been demonstrated. Hence, by virtue of its importance and on account of the great frequency of inflammatory diseases of the vesicle, greater attention has been given to the surgery. Here the minute anatomy as well as the rather obscure location has favored their development as well as concealed them, and I am inclined to believe that these facts and not the belief of their inaccessibility were the real cause for the rather late acceptance of surgical interference.

It is probable that the direct or indirect drainage of these organs has even as yet not received the attention which will come in due course of time.

The observations of others, as well as my own, show that the gonococcus is not the germ which is the one most often found. In the acute state the gonococcus may pave the way for secondary infection, but it soon becomes extinct and the secondary infectious germs are the cause of the resultant condition and symptoms. In order of frequency these are the staphylococcus, the streptococcus and the colon bacillus. I do not mean, however, that the gonococcus is ever absent in the chronic cases. In cases of toxemia, whether manifested by involvement of joints or elsewhere, if cultures as well as smears, and finally if the complement-fixation test is negative, how is it possible to conclude correctly that the focus of dissemination is in the vesicles? Furthermore, even if they are pathologically involved, from what I have already stated it can be seen that drainage cannot be ideal and spontaneous cure cannot be expected. Is it a wonder that the urologist is giving much time and attention to this subject?

THE SYMPTOMATOLOGY OF SEMINAL VESICULITIS

For a thorough appreciation of the attitude taken in regard to the surgery, the symptomatology of seminal vesiculitis must be understood. I know of no better classification that that of Belfield, who has grouped all symptoms as referable to (1) the genital organs, (2) urinary organs, (3) rectum, and (4) abdomen, or as (5) systemic.

1. All the sexual signs and symptoms should be taken into consideration: painful erections, painful orgasm, premature ejaculation, weak orgasm, impotence, sterility due to absence of spermatozoa, pyospermia, hemospermia and epididymitis. The latter is to me always a positive indication of a vesiculitis on the corresponding side. Blood in the semen is equally as positive, in my opinion. I wish to impress the fact that if the secretion gained following stripping of the posterior adnexa shows only microscopic red blood cells with the presence of pus, with or without the presence of spermatazoa, it is an indication of an inflammation of the vesicle, even if the examining finger does not detect a pathologic condition. Pains in the testes, epididymes, groins or perineum or in the region of the vesicles should be considered. Colicky pains have been mistaken for ureteral colics, and I am aware of several instances in which patients have been operated on. Spermatorrhea is not uncommon in cases of spermatocystitis, and may be either micturitional or defecational in character.

2. The urinary symptoms include painful urination, the pain usually terminal, and often accompanied with tenesmus; frequency of urination day or night, dribbling, with a weak stream and often with no terminal force, and colicky pains which simulate ureteral or appendiceal colics and often cannot be distinguished. In advanced cases there are a trigon cystitis and cystitis over the area of diseased vesicles, and signs and symptoms of a cystitis. Even partial or complete retention of urine, particularly the former, is rather common. Discharge from the urethra, varying in microscopic appearance, can, of course, be the cause of reinfection of the urethra.

3. Rectal symptoms are feeling of itchiness, warmth, fulness or even pain; sensation of feeling a lump or presence of obstruction, and at the time of bowel movement a bearing down sensation. Proctitis may result. Anal irritation is not uncommon.

4. Abdominal symptoms are chiefly intestinal in character. Peritoneal symptoms are not uncommon. Attacks of pain, with the concomitant signs and symptoms, have frequently been mistaken for appendicitis. I know of numerous cases in which operations have thus been performed.

5. Systemic symptoms in acute attacks are ushered in with chill, fever, malaise, headache, loss of appetite and constipation. The most common systemic symptoms in the acute, but particularly so in the chronic cases, are the various types of involvement of the joints or tissues around them, toxic, nutritive or trophic in character. The formation of spicules on the bones which are particularly subject to intermittent pressure, as on the astragalus, is a common occurrence. Pains, which are referred to often as "rheumatic," may be produced anywhere in the muscular as well as in the bony part of the body.

It is only natural that some of the symptoms or signs of the various groups may be present or absent in one or all of the cases. It might be stated that no two cases are identical.

With all this, another group of symptoms referable to the nervous and mental system may be correlated. These patients are frequently regarded as sexual neurasthenics.

CLASSIFICATION OF CASES

In selecting cases for the operation of vesiculotomy, Fuller has grouped them according to prominence of clinical symptoms, rather than in accordance with pathologic lesions, into (1) urinary, (2) genital, (3) nervous and mental, and (4) rheumatic.

Squier, with operative drainage purposes in view, has grouped them into (1) the pus type, (2) the pain type, and (3) the rheumatic type.

METHODS OF PROCEDURE

I believe that if a patient has an involvement of one or both vesicles which does not result in a spontaneous cure, he should receive surgical consideration. This applies also in case all the regular treatment, including the stripping process, has been carried out carefully and systematically over a variable period of time, depending on the individual, but has not resulted in recovery.

I wish to impress the fact that no undue haste need be exerted. Every recognized procedure should be used to assist in attaining the desired results. I have seen many apparently severe cases which have resulted in a freedom of symptoms by adhering to systematic, often intermittent, treatment covering a period of years. In cases with pronounced sexual disturbances as the chief complaint, great care should be exercised in deciding on operation.

I am still of the belief, here as elsewhere in surgery, that if minor procedures can give relief, these steps are always the method of choice. I refer particularly to vasotomy. If up to the present time there is no known method, at least in a large group of cases, of determining beforehand what drainage through the vas can do, and this must be admitted, it stands to reason that where this procedure has been demonstrated to be without ill results, vasotomy in this group of cases should always be carried out, even if only as a preliminary step to vesiculotomy or vesiculectomy. I might state that, if unsuccessful, it would act as a preparatory mode of treatment, similar to a suprapubic drainage previous to the removal of the prostate gland.

It is wrong to assume, as some enthusiasts already have done, that one should abandon all the time honored methods of treatment, and even also vasotomy, and immediately on the diagnosis of spermatocystitis proceed to the drainage of the vesicles with the belief that it is always correct to attack the focus of infection in a surgical manner. This view cannot be too strongly condemned, at the present state of our knowledge. Vesiculotomy, in the acute type of cases in which there can be no question of a pseudo-abscess and with the presence of grave symptoms, should always be performed. I am quite certain that it would not be correct to wait and watch. Puncture by rectum in the light of modern surgery would not be correct, and perineal vesiculotomy would unquestionably be the method of choice.

These cases should not be handled too conservatively. All records agree that excellent results follow. Pain is immediately relieved, and it has been demonstrated that the anatomic results are satisfactory. Take, or

the other hand, a long-standing case with marked systemic symptoms, in which there is an infiltration of a pronounced type: If, as one suspects and finds at the time of operation, there is perivesiculitis, and the vesicle wall is thoroughly riddled with miliary abscesses, one need not hesitate to do a vesiculectomy.

In cases of marked infiltration in which the vesicles are adherent to surrounding parts, even in the absence of systemic symptoms, but in which signs of an involvement of the bladder are present, I am in favor of vesiculectomy rather than vesiculotomy. Naturally, extirpation may be difficult; it is in my opinion nevertheless, the only correct procedure.

To enumerate a few more instances in which operative treatment is absolutely indicated, I may mention those cases complicated with colicky pains, those simulating ureteral or appendiceal colics. Infection is usually present, although calculi are to be always suspected in these cases. Here removal of stone and drainage or even complete excision may be demanded. I believe that the types of cases mentioned are strictly surgical in character, and that the indications for operation are clear.

How about the indications and contraindications for operation in all of the remaining cases—those which one meets most often in daily practice? I have already outlined my views, so I need not repeat. I have simply expressed my personal views when I state that each individual case must be thoroughly considered. I have always hesitated, for instance, whenever nervous or mental symptoms were present. Certainly if they predominate, one should be inclined to refuse operation, particularly if the accompanying symptoms are minor in character.

That either of these operations is an operation of considerable gravity all must admit, considering the accidents, complications, the acknowledged results, and the necessity as a rule of a general anesthetic. It is at present still advisable to be conservative with all cases excepting those mentioned. A fair amount of treatment, followed by vasotomy, and further treatment if necessary for all the remaining cases, and then a not too prolonged interval of rest, should decide the necessity of operative interference. It is not always possible to advise correctly, even in the types enumerated, at the first time of examination. I have frequently seen patients with infiltrated and sensitive vesicles recover fully with the ordinary treatment. Again, there are instances in which cases with symptoms of grave character clear up quickly with the usual treatment.

In order that there may be no misunderstanding, I wish to refer also to the undisturbed functional results. The functional results of the operations on the vesicles have not as yet been thoroughly studied, but my first impression would be that sterility could easily result. But the question arises whether this would not result without operation. Furthermore, perineal prostatectomies have demonstrated that wide exposure necessitates the weakening of the perineum and the frequent sequence of superinduced symptoms, besides untoward results, such as fistulas with their train of undesirable symptoms. In taking all the foregoing into consideration, and if all the treatment has been of no avail, the individual case must be analyzed. It is always desirable to classify by considering the predominating symptoms. The case may be sexual, urinary, rectal, abdominal, systemic or nervous and mental. If, after all treatment has been carried out as suggested, and if the patient still remains a sufferer, I can only advise that every angle again be scrutinized. Then and only then should surgical intervention be undertaken.

ANATOMY OF VESICLES

In taking up the surgery of the seminal vesicles, there are certain anatomic conditions which must be thoroughly grasped in order definitely to establish operative procedures which may then be carried out with ease and precision.

In textbooks the position of the ureter in relation to the ampullae and vesicles is frequently shown incorrectly. The upper portion and then only the lateral portion of the vesicle covers the ureter, yet distinctly separated by the capsule of the vesicle and with fat tissue. The ureter does not come in contact with the ampulla, but there is a relationship to the ductus deferentes. The ureter passes from behind forward to the bladder, and the duct from in front backward, and it necessitates crossing at the lateral bladder wall, where it joins the fundus.

The rectovesical fold covers the upper third and in some instances the upper half of the seminal vesicles. This depends entirely on their size, distention and lateral degree of divergence. In the area of the pars interampullaris it dips downward. I wish to state that I have seen gross anatomic specimens in which it has covered the prostate and almost passed downward close to the anus.

There is a venous plexus covering the vesicles, and it is connected with the vesicoprostatic plexus. The arterial supply comes from the inferior vesical, median hemorrhoidal and deferential. Their entrance and distribution are variable, however; most frequently the larger vessel appears to pass downward from the apex of the vesicle.

The location of the vesicles and ampullae with the relation of the adjoining parts should be thoroughly understood. They are encapsulated, directly over the prostate between rectum and bladder. The ampullae run parallel to the median border of the vesicles. The ampullae practically come together at the median line and diverge so that at their upper angle they are 6 or 7 cm. apart and almost come in contact with the lateral pelvic wall. Here both ampullae and vesicles are in contact with the fundus of the bladder, and the lower portions in contact with the trigon. Their posterior surface comes in contact with the fascia rectovesicalis or the fascia of Dénonvillier, and this is separated from the rectum with little connective tissue. Finally, the anatomy of the perineum should be thoroughly understood.

SURGERY OF VESICLES

In the development of the surgery of the vesicles, for spermatocystitis, all the surgery which was carried out for tuberculous processes as well as for new growths has been of great help. Considering that the vesicles are situated in the pelvis and surrounded by important structures, it is needless to state that many methods of approach were advanced. All, however, can be classified as either from above or from below.

For our purposes all the methods from above need not be considered. Furthermore, the methods of approach from below, the sacral and the ischiorectal, need not seriously be studied. It may be true that there may be instances which might necessitate considera-

tion of any one of these. I have been fortunate in having had sufficient experience to believe that the perineal route is the route of choice, although it must be admitted that there are disadvantages to this procedure, just as there are to any surgical interference of a major character. I may be mistaken, but I am rather inclined to believe that a thorough inspection which permits of exactness permits of accurate incisions into the vesicles or their removal under direct observation, and complete hemostasis is preferable to operative interference which does not allow all of this. Fuller maintains otherwise, and with his remarkable results to his credit one could not expect him to do otherwise. It is needless to argue the reasons; but when one is sufficiently capable to attach these organs, one must also decide as to whether one prefers the one or the other of the procedures.

TECHNIC OF OPERATION

The operative interference which has given me satisfactory results is as follows:

1. The patient should be placed in the extreme lithotomy position. This appears to me as the most essential point. To attempt to do an operation with exactness and ease necessitates that the patient shall be in this position. He should also be immobilized.

2. The skin incision should be either the semilunar or the inverted V incision, practically extending from tuberosity to tuberosity. Other incisions may be made, however, provided good access can be attained.

3. The median tendon should be exposed and divided.

4. With blunt dissection the fossae either side should be opened and then the urethrorectal muscle divided. This then permits of exposure of the prostate and the vesicles which are hidden by the fascia of Dénonvillier. I have practically always found that surgical interference to the vesicles could then be carried out. Squier, however, advises at this stage of the operation that a needle threaded with heavy silk be passed through the tissue at the juncture of prostate and bladder, one on each side. By pulling downward and forward, the floor of the bladder with the vesicles covered by the fascia are brought into better view. Tenaculum forceps can be used in a similar manner. Young has increased the length of his tractor, and passes it through the urethra into the bladder, spreads the blades and exerts pressure in the arch of the pubes, in this manner accomplishing the same thing.

These procedures all tend to fix the parts, bring them nearer the surface and allow of easier manipulation. Depending on what is necessary, the fascia is picked up with a tenaculum and incised first over one vesicle, and punctures or incisions into the vesicles and their diverticula according to their anatomy are made. A drainage tube of small caliber is placed in the vesicle and held in place by being sewed with catgut to the fascia. The opposite vesicle may be attached and a portion of the fascia covering the vesicle may be excised, and if found necessary the vesicle can be removed. It is desirable to enucleate from above downward and to cut off close to the ampulla. Drainage can be placed. The muscles and tendon and skin are united, the drainage to pass out at either angle of the skin wound. The after-treatment consists of permitting the drain to remain in place from ten to fifteen days.

There can be no doubt that injuries to an anomalously placed peritoneum is possible, hemorrhages may occur, ureters may be severed or injured, the bulb injured or its arteries severed, and the urethra, bladder or rectum may be entered. In the latter instances fistulas may result, which might demand further attention.

5 South Wabash Avenue.

THE SIGNS AND SYMPTOMS OF IMPENDING DEATH *

THOMAS F. REILLY, M.D.
Professor of Applied Therapeutics, Fordham University, School of Medicine
NEW YORK

To all men death must come soon or late, and there is an old saying that death always comes unexpectedly. But to tell when death will surely occur is the most difficult problem in the whole art of medicine. It is quite true that we know that the ultimate outcome of certain diseases, such as hydrophobia, Addison's disease, cancer, etc., is death, and that death will occur within a certain more or less definite period of time; yet when we come face to face with the ordinary serious case in practice, how many of us can say that the patient will die of this disease, or that he cannot recover from this illness and will die shortly? In spite of the millions of observations made on the approach of death, the literature on this phase of the subject is almost nil. I am afraid that the public is frequently a better judge of this imminent danger than the physician. I am quite sure that women sense the appearance of the fearful scythe bearer much more keenly than do men. This is particularly true of the woman relative who nurses the sick one, even though we admit that sometimes she conjures up the grim shadow when there is no cause for alarm. If we could mentally see the possibility of death in every severe case, we should less often miss the prognosis.

To point out all of the combinations wherein death will almost certainly take place would necessitate the summary of a whole practice of medicine. For that reason I shall confine myself rather to a discussion of symptoms and syndromes than to diseases, as there are certain symptoms which are present to a greater or less degree in every sick person. In no instances are the signs identical, yet several are common in most cases. Most of these signs were noticed by Hippocrates, and, strangely, there have been very few signs added since his time of an occurrence that has been observed by millions of people an innumerable number of times. I believe that most of us think that we recognize the onset of death instinctively, but this is not so. It must be as a result of previous observations, and it is my endeavor to bring together the facts on which we make this judgment.

Most of us are timid in making the pronouncement of death in any case unless the patient is already at the fatal moment, because of the traditional statement about such and such a man who was given up to die, but recovered and eventually outlived the medical jurist who sentenced him to die. I believe that the older physicians made this error more than the present day practitioner. I know that any one can cite isolated

* Read before the Harlem Medical Association, April 5, 1914.

V. 191

instances, extreme cases, in which everything seemed to point to the fact that death was imminent, and yet the patient recovered. Such instances will always occur, no matter what principles are laid down; but they are comparatively rare. Typhoid fever, cholera, pulmonary phthisis and wet brain furnish exceptions to almost every rule, so far as the onset of death is concerned. In the present knowledge of medicine, no one can foretell the sudden fatal outcome in many cases such as develop in the course of myocarditis, cerebral hemorrhage, angina pectoris, nephritis, post-operative thrombi, etc. These accidents happen daily in all hospitals. Often a patient is just about to be discharged, and he falls over dead with no apparent reason. These, however, are rather the exception, and it is not of this class of cases that I wish to speak.

Yet the question of being able to foretell in cases of a chronic or subacute, or even acute, character whether the patient will die within a day or two is of the utmost importance. In New York no patient may be transferred from one hospital to another who is likely to die within forty-eight hours, and the visiting physician who signs such a transfer commits a misdemeanor and is liable to fine. For that reason, in many of our hospitals, patients are kept for weeks and even months because there are signs or symptoms present sufficient to make death a possibility within forty-eight hours. This is particularly true of pulmonary tuberculosis.

Much has been written on how death occurs, and to discuss this would lead us too far afield. Suffice it to say that death usually occurs as a result of (1) failure of heart, (2) failure of respiration, (3) asthenia, (4) vagus failure, or (5) shock, and that almost always the centers in the medulla are the controlling factors rather than the organs themselves. In general, the process of death begins at the periphery and ends at the center, so that the symptoms of approaching death are generally first observed at the periphery and later can be traced to the center. Smell is the first sense to go; then follow taste and sight, and hearing last.

There are few single symptoms pathognomonic of death, but a combination of two or more symptoms will often lead us to make a positive statement as to its approach. In the following résumé I shall consider those danger signals which commonly precede death. When any one of these symptoms is present there are generally others also evident. It is well to remember never to give an absolutely fatal prognosis in typhoid fever or cholera so long as there is life left in the body.

PULSE

By impending death is meant death within a day or two. The pulse has always been considered the most reliable single indicator of approaching death. A pulse which is irregular for the first time in disease is a cause for grave alarm, provided it is not due to either sinus arrhythmia or premature contractions; when the patient is in the recumbent position and the pulse disappears from the wrist for the first time, he rarely recovers. This is not true in cardiac disease, or in sudden severe hemorrhage, as recovery often occurs after such a disappearance of the pulse. In hemorrhage, it is ominous; but if there is no jactitation there is always hope. If there is much jactitation present, death practically always occurs whether operation be performed or not. Pulsus alternans, when it can be appreciated by the finger (except in some rare cases of cardiorenal disease), always means death within a short interval. In cardiac disease it usually means death within at least a month. When pulsus alternans can be determined only by instrumental means, the patient may survive for a long time. I have noticed a pulse closely simulating this, which has always been followed shortly by a fatal issue. There are four or five regular beats of fairly good tension; then all at once the beat will sink under the finger with about one half the tension of the former beats. Auscultation shows that it is not due to an extrasystole. I have noticed this in patients dying of various diseases, but it has been more common in cases of fractured skull.

Except in heart block, a pulse under 80 in an adult means that death in any event is probably at least more than twelve hours off. This is not true of the aged. A slow pulse is quite often present in these patients up to the moment of death. On the other hand, in these old persons a pulse of 140 means death within a few hours at most. In children, if the pulse is under 120, death is extremely rare within six hours. Even in coma a pulse of 100 usually means that death is at least eight or ten hours off.

Of course these statements do not mean that death will occur, but rather that the patient is safe for at least that length of time. In an adult, with the exception of paroxysmal tachycardia, exophthalmic goiter, pericarditis and pulmonary tuberculosis, a pulse of 140 continued for more than an hour and not due to some accidental complication means death. Except in pericarditis, any pulse gradually mounting to 160 per minute presages a fatal termination. In general, in acute diseases a pulse that is steadily increasing in frequency hour by hour portends early dissolution, provided other signs of serious illness are present. One cannot foretell the approach of death by the pulse in either the aged or in children with the same degree of certainty as in the adult; likewise the pulse is an uncertain guide as to the termination of tuberculosis. Old cardiacs with auricular fibrillation, causing all sorts of combinations of the rate and strength of the pulse, are apt to deceive us. In such cases, often at first sight it appears as though a fatal outcome is only a matter of hours, yet treatment carries them on to recovery; while the next time the fatal issue may occur with much the same general appearance and symptoms.

Cases of auricular flutter deceive every one. This is especially true if the patient looks ill. Such pulses of 150 or more per minute, with attendant prostration, seem almost incompatible with continued existence. The prognosis of an early fatal termination in these cases is a mistake, for the patients often live for months and even years. Fortunately, it is a very rare condition, and occurs chiefly in those far advanced in years.

In a very sick patient not suffering from cardiac disease, if the pulse disappears from the wrist when the hand is raised vertically above the head, the end can be confidently predicted within twenty-four hours.

Gallop rhythm, not associated with rheumatic carditis, is always fatal. In the case of a very ill patient whose pulse has been rapid for weeks and then drops down to 50 or 60 with no marked amelioration of symptoms, except in paroxysmal tachycardia, a fatal termination may be expected shortly. Persistent firm pulse in coma associated with hemiplegia is a fatal sign. In all infectious diseases, a sharp, strong, distinct pulmonary valve sound means that death will not take place for at least twelve hours.

BLOOD PRESSURE, RESPIRATION, ETC.

At first sight one might think that this would be a valuable means of scenting the universal evil, but unfortunately thus far it has not been of much practical value. While it is usually true that in most cases of impending death there is a steady drop in blood pressure, practically it is not possible to have blood pressure readings done as often as would be necessary to arrive at a conclusion. In such cases, other symptoms almost always presage the approaching end quite as well. We do know that a very high blood pressure—say of 230—which falls suddenly below 100 without any sign of hemorrhage, usually means a fatal issue, and also that a blood pressure in any adult steadily falling to 40 is usually synonymous with a fatal outcome. In pneumonia, Gibson's rule, that when the blood pressure falls numerically below the pulse rate danger is near, is not always a safe guide. It is of more value in young strong adults than in children or the aged.

Next to the pulse, the respiration—being of equal import as far as the function of life is concerned—claims our attention. I am quite well aware that the Cheyne-Stokes phenomenon does occur in healthy human beings, but the appearance of a well-marked Cheyne-Stokes type of respiration in a sick patient is practically always a sign that death is at the door. Very rarely does the patient recover, and only when he is suffering from uremia or cardiorenal disease. Less rarely death may be deferred for a few weeks, but it always comes shortly. The Cheyne-Stokes phenomenon occurring in auricular fibrillation does not have the same fatal prognosis as in other conditions. If the heart will react to digitalis—and it usually does so—the patient may recover and live for many years. When it occurs in coma other than uremic coma, it is always a fatal sign. Even in uremic coma, recovery is rare. In any case, when rapid breathing follows the onset of the Cheyne-Stokes phenomenon, death is at hand. From a limited number of observations, it has seemed to me that a relatively rapid breathing—over 40 per minute—during the phenomenon itself means an early lethal termination.

A marked disproportion in length of inspiration over expiration is of itself a very suggestive sign. When it is coupled with a rapid pulse, except in shock or hemorrhage, the combination is uniformly fatal. This type of respiration finds its highest exemplification in the air hunger of Kussmaul in diabetes. Continued sighing respiration under the same conditions as mentioned above has almost the same significance. In an obviously sick person not suffering from asthma or any mechanical obstruction to breathing, sternocleidomastoid breathing is likewise a forerunner of a fatal issue, and death is seldom long postponed. Cold respiration from mouth and nose is generally a terminal symptom.

The persistent up and down motion of the Adam's apple, such as is seen temporarily in normal patients in the act of swallowing, in a sick patient, means, according to the late Dr. John Shrady, a rapidly fatal issue. I take it that the phenomenon is due to a failing of the vagus center. It is so commonly associated with other signs that it is not of much value except when present in a sleeping patient. The so-called "death rattle" of the laity is positively a fatal sign. This is, of course, associated with pulmonary edema. True pulmonary edema is not of itself always fatal, but is generally so. In cardiac and renal disease, recovery frequently occurs. When it persists for four or five hours, recovery is very rare. When it occurs in an unconscious patient, it is always fatal.

The presence of black or bloody tinged saliva running out of the side of the mouth in a comatose patient is a fatal omen.

In the last few minutes of life, sometimes there is an enormous quantity of white frothy fluid flowing in a steady stream from the nostrils. When this occurs, death is only a matter of minutes.

EYE

I should consider the eye signs as next in value from a prognostic standpoint. In any very sick patient whose pupillary reflexes were previously normal, and in whom there is now no reaction of the pupil to light, death is at hand. To this general statement there are some exceptions, namely, in the spinal myosis of the aged, syphilis or its sequelae, brain diseases, optic atrophy, fainting and hemorrhage. A sluggish reaction under the same circumstances is serious but not necessarily fatal. A dilated pupil under the same circumstances, not reacting to light, means that death is at the door. In most diseases, just before death the pupil dilates widely. Tennyson states this well when he says, "As unto dying eyes the hollow casement slowly grows a glimmering square," meaning thereby that the dilated pupil is unable to distinguish sharply the window panes.

A glazed pupil usually means that death is at hand. The presence of a film over the eye is always a fatal sign. The death stare or fixed eye is probably due to the dilated nonreactive pupil, although sometimes if the patient's attention is directed to it he can actually count the fingers of the hand. It is a fatal sign. Tight closing of the eyes with a firm and rapid pulse, excepting in hysteria, is said to be a sign of an impending fatal issue. When the eyes are half open during sleep, the patient is not necessarily *in extremis*, but it is a sign of much gravity, especially if it is not due to prostration from diarrhea. Passive congestion of the conjunctival vessels in a child means approaching death. A tendency of the eyes to turn out occasionally presages death within a few hours.

OTHER SIGNS

The facies described by Hippocrates as indicative of approaching death is still as awesome as it was 2,500 years ago. When this occurs, death is opening the door, and every one knows his knock. There is a noted pallor of the face, with pinched nostrils, sunken and hollow eyes, collapsed temples, cold and transparent ears, with the lobes turned out, dropping of the lower jaw, haziness of the cornea, and the eyes fixed on some object. To this picture, the late Austin Flint added the following: persistent lividity of the lower lip, spasmodic inspiration not due to hysteria or lung disease, loss of power of swallowing; skin about the forehead rough, distended and pasty, and the face green, black, livid or lead-colored.

A temperature of 108 F. is not recovered from except in heat stroke. A temperature of 107 lasting more than two hours is rarely recovered from. A rising temperature on the second day after the occurrence of hemiplegia is fatal. A temperature in these cases of 106 at any time within the first three or four days means death. The existence of extensive chronic renal disease with a severe continued fever makes recovery a rarity.

V. 191

Loss of sphincter control is always a grave sign, especially when coma is not present. When both vesical and rectal sphincters are paralyzed, recovery is uncommon, except in coma and nervous diseases.

Fifty per cent. of badly coated tongues are serious cases. A tongue with a bright yellow discoloration like the yolk of an egg is a fatal sign in peritonitis.

If when a patient is swallowing food a sound is made like the dropping of a foreign body in a well, there is little hope for the patient. A loud churning noise with each respiration, as if the abdomen contained much fluid, is a fatal sign in the pneumonia of children, and often in that of adults.

The vomiting of frothy mucus mixed with blood, except in acute hemorrhage or in convulsions, is a fairly certain sign of approaching death. A continuous coffee-ground colored vomit, except in gastric ulcer, is also a fairly fatal sign. The black vomit of yellow fever has the same significance. A black vomit coming on forty-eight hours after operation is practically always fatal in its outcome. In apoplectic coma when mucus, not saliva, comes from the mouth at each expiration, a fatal ending is near.

Hematogenous jaundice following fevers, snake bites, typhoid, etc., is generally fatal. Petechiae, especially if large and in an exhausted patient, particularly in cancer or renal disease, mean that the end may generally be expected within a month or two at the most. Aphthous stomatitis in any wasting disease generally means approaching death.

Persistent and uncontrollable hiccup in any serious illness is usually the harbinger of death. Profuse sweating at the commencement of an acute febrile disease, except in rheumatic fever, while the temperature remains permanently high, indicates great weakness and adds much to the gravity of the case. If along with this there is a cyanotic hue of the face, ears and nails, the outlook is extremely grave. The appearance of large amounts of indican in the blood or in transudates is a fatal sign.

The loss of more than half of the body weight means that the patient cannot recover. Gritting of the teeth in the course of fever in adults, unless it be a former habit, is a sign of serious omen. Subsultus tendinum, due to irregular spasm of the muscles, and carphologia are of very grave import, but patients who have thus suffered recover when these occur in the course of typhoid fever. Recovery is rare in other diseases.

In narcotic poisoning and in freezing, the desire of the patient to be let alone is a bad sign.

Convulsions lasting four days are uniformly fatal, excepting occasionally in epilepsy.

Fibrillary tremor of the heart in electric shock is always followed by death.

The disappearance of the peripheral reflexes, except in disease of the central nervous system, is often a harbinger of death.

Edema of the glottis in a patient over 45 years of age is followed by death within a few hours.

Just before death there is a peculiar odor of the breath in many patients. It closely resembles the odor of acetone. It is very difficult to describe this odor, but once noticed it will generally be recognized thereafter. Some describe it as being similar to the odor of horseradish. By others, the odor is described as like that of decayed apple blossoms. The odor of death is not so noticeable in hospital patients as in private practice because the ventilation is different. One appreciates it better when coming in quickly out of the air into a closed sick room.

Aside from the suffering due to pain, the appearance of great mental distress is a bad sign. Of this expression of anxiety, the patient himself is usually entirely unconscious. It would seem as if the body recognized danger when the mind did not. Fortunately, few persons realize that they are going to die. In general, in adults the seriousness of the prognosis depends more on the appearance of mental symptoms than on any other group of symptoms. Whatever the predominant passion was during life is apt to show itself in some way or other during the last few hours. Loss of interest in things that formerly interested the patient is a bad sign.

In any disease, the presentiment of a fatal issue by the patient at the onset is a bad omen. This is particularly true if severe pain is not present. I have often tried to argue with the patient in an attempt to eradicate this seeming delusion from his mind, but in most instances, I am sorry to say, the delusion of hopefulness really existed in my own mind. It gives me a psychic shiver when a patient who is well balanced mentally and who is suffering from a serious but not necessarily fatal illness says, "Doctor, I am going to die. I know it." Likewise, when a patient shows no interest in a consultation held over his bedside, there is grave cause for alarm. When a uremic patient becomes jolly and joyous, a serious condition is present, and very often a fatal termination is near at hand.

There is a great deal of folk lore among the laity relative to this subject. Of course, much of it has very little foundation in fact; but many times these sayings suggest to us a fatal prognosis when our ultra-scientific methods fail to make us think of the likelihood of death. When the skin over the forehead is tense and shiny, the old nurse wisely shakes her head and says it is a bad sign. When the patient wants to go home or wants to go back to green fields, etc., he generally does; but it is not to the home or the green fields of his youth. When the patient is constantly wishing to be changed from bed to bed, or when in the absence of pain and nervousness he is constantly wishing to change his position in the bed, a serious outcome may be expected. This is a very common symptom of serious import in heart disease if dyspnea is not present. Picking at the bedclothes is usually viewed as a symptom betokening a fatal termination. Excepting in typhoid fever it is truly a sign of great gravity. Shakespeare well describes the death of Falstaff thus:

"After I saw him fumble with the sheets, and play with flowers, and smile upon his fingers' ends, I knew there was but one way, for his nose was as sharp as a pen." Again, he speaks of coldness of the ear tips and of the nose, followed later by coldness of the patellae. Old nurses are very apt to call our attention to coldness of the feet and knees when a case has taken a serious turn. Especially is this true if there be a high temperature present at the same time.

The hunger of death is an abnormal appetite occurring in the last few hours or days of life, and probably represents an effort to overcome the sense of exhaustion or goneness in the epigastrium. It is mostly seen, as far as my experience goes, among consumptives, although sometimes it occurs in typhoid fever. Such patients rarely eat much of the food that they order. It is a symptom not often encountered. Sliding down

to the foot of the bed is a sign commonly believed to be a bad omen.

Left unilateral dropsy, beginning at the foot and extending up the body, is credited with being a harbinger of early death.

When a burn involves more than one third of the body, death is a certainty. If the burn be confined largely to the face, then a burned area much less than one third of the body means death.

In scarlet fever, an ashy tint of the countenance with a purple hue of the nails, distinctive white lines about the mouth, and whispering voice portend early death.

In apoplexy, even after the tenth day, if the patient is irritable and restless, death will shortly occur. A convulsion occurring in apoplexy generally means death. Most of these patients are bathed in a cold sweat just before death.

In tuberculous meningitis, it is said that the disappearance of the eosinophils from the blood is a sign that death is very near.

Coma is the commonest form of death. About 60 per cent. of patients die in coma. When coma occurs in acute disease, except in typhoid fever and meningitis, one is generally safe in predicting a fatal issue. It may not be amiss to mention the forms of death in most acute diseases.

Usually, just before the fatal issue there is a lowering of blood pressure. This is generally accompanied by increased rapidity of the heart; shortly afterward tympanites becomes marked. The patient now looks as though he had been bled excessively and has all the appearances of profound shock. The pulse becomes irregular, and this is often followed by delirium, restlessness, hallucinations and later by stupor and coma. Occasionally the heart becomes slower, but in most instances its rapidity increases. The patient invariably dies when this syndrome is developed.

Less often one sees another form of death in acute disease. Here the patient is cyanotic and there is great dyspnea. The jugulars are full and pulsating and there is often marked pulsation over the heart. The heart dulness is increased to the right, and the lower dulness increases downward. Rarely is such a patient saved.

Finally, when a rattle persists after coughing, the end is near.

CONCLUSION

I can only repeat the idea expressed at the commencement, that there is no "no" or "never" in medicine—that occasional patients will present one or many of the signs mentioned above as indicative of approaching dissolution and yet will recover. But rules in life cannot be negatived because of occasional exceptions, and in the main the foregoing is a true summary of the subject for the average case.

220 West One Hundred and Thirty-Ninth Street.

Prizes for Health Posters.—The Bureau of Public Health and Hygiene of the Association for Improving the Condition of the Poor of New York City has offered medals and cash prizes to public school pupils for posters to be used for teaching the dangers of spreading disease by sneezing. Leaflets giving the particulars concerning the contest have been distributed in all the schools. It is believed that this constitutes an excellent plan for stimulating interest in health matters and should bring a very large return for a little money.

RESUSCITATION BY MEANS OF PRESERVED LIVING ERYTHROCYTES IN EXPERIMENTAL ILLUMINATING GAS ASPHYXIA *

W. H. BURMEISTER, M.D.
CHICAGO

The number of accidental deaths resulting from carbon monoxid asphyxiation has increased to a considerable extent within the last decade. The proper treatment of patients in whom life is not yet extinct is not universally agreed on. This probably, in a measure, is due to the fact that clinicians and pathologists are not yet in unison as to the cause of death in these cases. Whether death is due to a direct action on the central nervous system by the carbon monoxid, as contended by Sibelius,[1] Traube[2] and many others, or whether the central nervous system changes are secondary to the more evident blood change as contended by Haldane,[3] is still a subject of controversy at this late date. It would seem, however, that Haldane's experiments are most conclusive. The color change occurring in the blood in cases of carbon monoxid poisoning has long been recognized as characteristic. It was in 1864 that Hoppe-Seyler noted the carbon monoxid hemoglobin spectrum. That a very definite chemical change takes place in the blood of such patients is not now a matter of dispute. The action of the carbon monoxid on the blood is a displacement of the oxygen of oxyhemoglobin by the carbon monoxid. The affinity of the carbon monoxid molecule for hemoglobin is 210 times as great as that of the oxygen molecule. It is because of this great affinity that erythrocytes will take up carbon monoxid and retain it at the expense of their oxygen content, even though the amount of carbon monoxid present in the inspired air be less than 0.10 per cent. Air mixtures containing as little as 0.05 per cent. are said to be definitely toxic.[4]

Haldane's experiments proved conclusively that death in these cases is essentially one of asphyxiation. Hemoglobin, the oxygen vehicle of the blood, ceases to perform its physiologic function because of a relatively stable chemical change. Unless an effective restoration of this oxygen carrying power of the hemoglobin can be brought about, or unless some oxygen vehicle can be substituted, death must surely occur. If this restoration to the hemoglobin of its physiologic function or the substitution of a new oxygen carrier is delayed too long, secondary asphyxia changes may have occurred in vital parts of the body such as the central nervous system, and these may then result in death, or, at best, recovery with an irreparably defective nervous system. The important factor in the treatment of these cases would therefore seem to be to supply the individual with a new oxygen vehicle and to do so as speedily as possible. It is interesting to note that as early as 1864 this was recognized by Kuehne,[5] who was remarkably successful in resuscitating animals experimentally asphyxiated with carbon monoxid. The clinicians of that day attempted to apply Kuehne's principles practically. The method chosen by most of them was the indirect transfusion of defibrinated blood. Results were disappointing, probably not so much because of crude tech-

* From the Department of Pathology of the University of Illinois.
1. Sibelius: Zentralbl. f. klin. Med., 1903, xlix, 111.
2. Traube: Verhandl. d. Berl. med. Gesellsch., 1865, i, 67.
3. Haldane: Jour. Physiol., 1895, p. 201.
4. Kobert: Lehrbuch der Intoxikationen, 1906, ii, 869.
5. Kuehne: Centralbl. f. d. med. Wissensch., 1864, ii, 134.

V. 191

nic, but rather, it would seem, because the amount of blood transfused was absurdly small. Frequently, because of lack of faith in the new treatment, transfusion was not resorted to until it became absolutely certain that death was imminent. Thus Friedberg[6] reports three cases, all ending fatally. He suggests the advisability of seeking some method of preserving human blood or of using blood of other animals. Mosler[7] reports one case which terminated fatally. Martin and Badt[8] succeeded in saving one patient with carbon monoxid asphyxiation by indirect transfusion. Wagner and Sommerbrodt[9] are said to have failed.

Following Kuehne's work up to 1874, fifteen cases of carbon monoxid poisoning treated by transfusion were reported,[10] six of these successfully, nine unsuccessfully. Loewenthal condemns transfusion, advocating instead, as more efficacious, intravenous saline infusion. Subsequently, with the perfection of superior technic in direct transfusion in this country, this method of treatment for carbon monoxid asphyxiation was employed. In 1900 Darrah[11] reported thirteen direct transfusions in dogs in experimental carbon monoxid asphyxiation with recovery. Thirteen control animals died. The dogs were transfused with an amount of blood equal to one-fifth to one-seventh their total volume of blood. Crile and Lenhart[12] used direct transfusion in experimental carbon monoxid asphyxiation with recovery in 70 to 80 per cent. The mortality in the controls in which attempts to resuscitate with all other recognized measures were made was 100 per cent. By Crile's method transfusion was not begun until it was without question apparent that all other methods of resuscitation would fail. Theoretically success would seem to depend directly on the quantity of transfused erythrocytes and indirectly on the length of time which elapses before the transfusion is begun. The difficulty, however, of obtaining donors for transfusion of blood in an emergency, where every minute counts, combined with the necessary delay entailed in the performance of a direct transfusion, even though a most skilled technician and a suitable donor be at hand, must always remain a great obstacle to successful treatment by this method. With this in mind, following the appearance of Hustin's[13] and Weil's[14] work on the indirect transfusion of citrated blood, I determined to adopt their method in the treatment of so-called "gas cases."

The following is a preliminary report of the experimental phase of this work. Weil[15] transfused blood in amounts of 250 to 1,400 c.c., the strength of sodium citrate varying from 0.3 per cent. to 1 per cent. It was possible to use blood three to six days after it had been obtained. Lewisohn[16] has estimated that a 0.15 per cent. to 0.2 per cent. solution of sodium citrate is sufficient to prevent coagulation of blood in test tubes for a period of three days. He further estimates that a total amount of 15 gm. of sodium citrate would prove fatal to an individual weighing 110 pounds. Lewisohn therefore advises the use of a less concentrated citrate solution rather than the 1 per cent. solution as originally used by Weil. Rous and Turner[17] have also found transfusions of blood in a citrated plasma occasionally highly toxic for animals. By using Ringer's solution containing 2.5 per cent. dextrose they found further that erythrocytes could be preserved for a longer period of time than they could in citrated plasma or in citrated Ringer's plasma.

The blood used in these experiments was obtained by bleeding dogs from the femoral artery under ether or morphin narcosis. This blood was received directly into a sterile flask which contained 25 c.c. of a 10 per cent. sodium citrate solution in water. The blood was allowed to flow in until the flask contained 250 c.c. of blood citrate mixture. To this was then added 250 c.c. of sterile Ringer's solution containing 2.5 per cent. dextrose. After gently mixing the contents by oscillating, the flask was placed in the dark at + 4 C. until the time of its transfusion. The bottle and its contents were centrifuged just before transfusion and the supernatant fluid, together with the layer of white corpuscles, was removed. This left usually 125 to 150 c.c. of a rather thick erythrocyte suspension. In this manner dogs' corpuscles were kept three or four weeks without any gross or microscopic evidence of deterioration. Occasionally the corpuscles of some dogs were slightly hemolyzed, or the corpuscle mixture in the bottom of the bottle became darkly discolored, although the mixture remained sterile. After the addition of Ringer's dextrose solution and following slight shaking, the blood usually remained a bright red in color. Only such blood was used in the transfusions. The rabbit blood used in the series of rabbits recorded below was obtained from normal rabbits by cardiac puncture. Because of the relatively small amount of blood necessary in the rabbit transfusions, proportionately ten to twelve times as much Ringer's dextrose solution was added to the blood citrate mixture. In this manner the sodium citrate, which undoubtedly is somewhat injurious to the corpuscles after a shorter or longer interval of time (apparently varying with the corpuscles), was very materially reduced in concentration. Rabbit's corpuscles thus treated remained intact and were successfully used even after ten weeks. Human or other corpuscles treated in this way would undoubtedly remain viable for relatively long periods of time.

EXPERIMENTS WITH RABBITS

My earliest work was with rabbits. These were placed in an air-tight compartment into which illuminating gas was admitted in amount sufficient to cause death in the controls within five to ten minutes. Twenty rabbits, inclusive of the controls, were treated in this way. The gas compartment was constructed in part of window glass so that the animal's respirations, and, in addition, its cardiac pulsations, could be observed. The rabbit's heart would usually continue to beat two to four minutes after its respirations had completely ceased. As soon as it was noted that the cardiac thrust against the thorax wall ceased, the animals were removed and suspended by their hind legs from a bracket fixture. The skin over a marginal vein in one of the ears had previously been prepared for an intravenous injection by removal of hair and cleansing with alcohol. While the rabbit was being suspended it was positively determined by palpation that the heart had ceased to beat. Rhythmical thorax compression, both for the purpose of artificial respiration and cardiac stimulation, was instituted. Meanwhile 20 c.c. of rabbit's erythrocytes, obtained as previously described, were injected intravenously into the marginal vein. The reaction in most instances was almost instantaneous.

6. Friedberg, H.: Vergiftung durch Kohlendunst, 1866, p. 166.
7. Mosler, Fr.: Ueber Transfusion defibrinirten Blutes, 1867.
8. Badt: Verhandl. d. Berl. med. Gesellsch., 1866, i, 301.
9. Wagner and Sommerbrodt: Cited by Badt, see Note 8.
10. Cited by Loewenthal: Wien. klin. Wchnschr., 1892, v, 378.
11. Darrah: Proc. Path. Soc. Phila., 1900, xxi, 29.
12. Crile: Hemorrhage and Transfusion, 1909.
13. Hustin: Ann. Soc. Roy. d. soc. méd. et nat. de Brux., 1914, iv, 104.
14. Weil, R.: Sodium Citrate in the Transfusion of Blood, THE JOURNAL A. M. A., Jan. 30, 1915, p. 425.
15. Cited by Otenberg, Libman: Am. Jour. Med. Sc., 1915, cl, 68.
16. Lewisohn: Surg., Gynec. and Obst., 1915, xxi, 40.
17. Proc. Soc. Exper. Biol. and Med., 1915, xii, 106 and 122.

The animal would begin to breathe and the heart would begin to contract in a few seconds most vigorously, despite the fact that previous artificial respiration and cardiac massage had been ineffective. The rabbit was released and placed in its cage and usually within three to thirty minutes would nibble at its food, and within an hour was quite as active as before the experiment. Full-grown rabbits weighing 1,800 to 2,500 gm. were used. Twelve rabbits were injected in this way. The corpuscles in all cases had been obtained not less than ten days before. In four instances they were three weeks old, in two they were ten weeks old. These six rabbits recovered, and at this date, four months later, are alive and apparenly normal. Of the twelve rabbits treated with erythrocytes, three died. One was found dead in its cage fifteen hours after transfusion. Necropsy revealed no gross changes other than the typical cherry red color of all the blood-containing tissues. Two rabbits died within five minutes following the transfusion. Immediate necropsy disclosed an extensive hemorrhage in the peritoneal cavity, undoubtedly secondary to the rupture of some small mesenteric vessel, though the vessel could not be found at the time.

From Haldane's work I had concluded that venesection, which has always been recommended in addition to transfusion by the advocates of the latter, was not necessary. Illuminating gas may, and probably does, contain toxic substances other than carbon monoxid, which can be taken up by the blood and act harmfully on other tissues. This being true, extensive bleeding prior to or at the time of transfusion would seem to be indicated. From the standpoint of the carbon monoxid content, however, blood removal would not seem necessary. The removal of an amount of blood equal to that injected, thus preventing a sudden overloading of a delicate vascular system, would, I believe, have saved the lives of the two rabbits which died with the intraperitoneal hemorrhage. Of the eight control rabbits, it was possible to resuscitate one by artificial respiration and external cardiac massage alone.

Crile objected to Kuehne's results because by Kuehne's method one could not be absolutely positive that in event of recovery the animals might not have recovered without transfusion. This would seem also to be a legitimate criticism to my rabbit series. Crile's method, while it assured him that his animals would surely have succumbed had they not been transfused, appeared objectionable because his animals could not be allowed to live more than an hour or two following the resuscitation because of the method employed.

EXPERIMENTS ON DOGS

To eliminate such criticism I determined to asphyxiate future animals slowly, taking from sixty to ninety minutes for the procedure, in order to imitate as nearly as possible the conditions under which human beings are asphyxiated and die.

Dogs were used in this series of experiments. An air-tight compartment 3 feet by 3 feet by 3 feet, made of wood and glass, was used. This was fitted with an inlet cock which permitted a regulation of the flow of gas into the compartment. The dog was placed in the compartment and sufficient gas allowed to flow in so that complete consciousness was lost in five to ten minutes. The dog was kept in the compartment, with the frequent addition of gas, until respirations had unquestionably ceased. If this occurred in less than sixty to ninety minutes, the dog was removed and artificial respiration instituted, and if resuscitation in this way was possible, the dog was again placed in the gas filled compartment. To insure as nearly as possible complete saturation of the hemoglobin by the carbon monoxid, only such dogs were used for the transfusions as had been in the compartment not less than sixty minutes. For a quantitative analysis of blood from such dogs I am indebted to William D. McNally, who found saturations of 19 to 40 per cent.[18]

My method of artificial respiration was slowly and rhythmically (six to eight per minute) to inflate the lungs with an ordinary foot bellows through a glass tube inserted from the mouth between the vocal cords into the trachea. Gunn and Martin,[19] in a recent work, found that they could resuscitate rabbits, following chloroform inhalation, by means of intrapericardial injections of epinephrin, combined with artificial respiration and cardiac massage. They were successful in doing this even though the heart had ceased to beat and respirations had been suspended for a period of fifteen to sixty minutes. It has been held generally that complete cessation of the blood flow through the central nervous system of mammals for more than fifteen minutes is fatal. I determined to supplement my transfusions with intrapericardial epinephrin medication.

Forty dogs were used in this second series. Preliminary tests to determine the presence of iso-agglutinins or hemolysins were ignored, inasmuch as it was determined to imitate as nearly as possible the conditions of extreme emergency as found when human beings are asphyxiated. A rapid and simple method for testing for agglutinins and hemolysins, recently devised by Rous and Turner[20] could, however, probably be completed before the transfusion was begun in a great many cases of human beings. Some of these individuals live from ten to twenty-four hours or longer before death occurs.

Dogs weighing from 4 to 7 kg. were used in these experiments. After the dog had been in the gas compartment sixty to ninety minutes and respiration had ceased, he was immediately removed and artificial respiration begun. If the heart had ceased beating, or as soon as it did cease (and it ultimately always did cease despite the artificial lung inflation), 1.5 c.c. to 2.5 c.c. of a 1:10,000 epinephrin solution was injected directly through the anterior thoracic wall, at the point where the last cardiac thrust had been palpated. Following this, in dogs in which the heart had just ceased beating, invariably pulsations would again begin if stimulated by forceful lateral thorax compression from both sides. This could usually be done by gripping the thorax with the palm of the hand over the sternum while the fingers were on one side and the thumb on the other side of the thorax. By forceful compression the heart could be felt as it slipped in its serous sac between the finger tips and thumb. Occasionally a rib was fractured where too much force was exerted. However, if resuscitation was ultimately attained this was of little moment in the end-result. If the heart could not again be started in this way it was useless to proceed further. This was true in the case of eight control dogs of the series.[21] Where, however, the cardiac pulsations had not ceased for more than two to three minutes it was usually possible again to start the contractions. During all of this time artificial inflation and deflation of the lungs was practiced. Frequently at this stage there would be an indication of beginning respiratory effort which might ultimately increase until a breathing rate of 1 to 4 per minute had been established. By working rapidly it was possible now to lay bare the external jugular vein, make a small incision and insert into it, before the heart again ceased beating, a small glass cannula. The cannula was equipped with a rubber tube attachment which could be fitted on to a large Lüer syringe. The erythrocyte suspension to be transfused had been previously warmed to 37 C. To 100 c.c. of corpuscles was now added 1 c.c. of a 1:10,000 epinephrin

18. The lower percentage by the Palladous Chlorid Method, the higher percentage by Haldane's Colorimetric Method; .380 c.c. of carbon monoxid gas was obtained at 0 C., 760 mm. pressure, per 100 c.c. of blood. Human beings who have died of carbon monoxid asphyxiation possess blood containing 5 to 28 per cent. as determined by the Palladous Chlorid Method.

19. Gunn and Martin: Jour. Pharmacol. and Exper. Therap., 1915, vii, 31.

20. Rous, P., and Turner, J. R.: A Rapid and Simple Method of Testing Donors for Transfusion, THE JOURNAL A. M. A., June 12, 1915, p. 1980.

21. One of these at necropsy was found to have an extensive fresh intraperitoneal hemorrhage.

solution. Depending on the size of the dog, 125 to 175 c.c. of corpuscle suspension were then slowly injected into the vein toward the heart. While the transfusion was in process about 100 c.c. of blood were allowed to flow from an incision in the vein peripheral to the point of injection. It was necessary to work rapidly. If the heart again ceased to contract before the transfusion was begun, it was usually impossible to effect a return of rhythmical contractions even though intrapericardial epinephrin injection and cardiac massage were once more resorted to. In only two instances out of a total of seven dogs did the continuance of the injection of the corpuscles plus epinephrin start the cardiac contraction. Of the five dogs which were not resuscitated by the transfusion after their heart contractions had ceased a second time, it is interesting to note that at immediate necropsy in two cases the right ventricle and auricle were found distended with clots of blood which were distinctly darker than the fluid blood also present.

Fifteen dogs in which the transfusion was begun before the heart had again ceased to pulsate lived. Five control dogs, in which it was possible to stimulate a return of cardiac and respiratory activity as above, in which, however, no transfusions were performed, died within two to four minutes following the temporary resuscitation. Four control dogs in which 125 c.c. of Ringer's dextrose solution plus epinephrin were injected intravenously instead of the corpuscle suspension, died within from three to five minutes after the intravenous injection, despite the fact that cardiac contractions had again been established, as had also a return of the respiration.

Of the fifteen dogs that lived following the erythrocyte transfusion, two failed to regain consciousness. One died after thirty-six hours, of coma. It is interesting to note that at necropsy the right heart was found distended by a bright cherry red fluid blood in which were many small, dark or black, irregularly-formed coagula. The branches of the pulmonary artery contained here and there fragments of such coagula, though there were no gross evidences of lung infarction. The second dog which failed to regain consciousness lived twelve hours. This dog was ill before experimented on, but was used because of a scarcity of available dogs at that time. At necropsy a severe purulent rhinitis and purulent bronchitis and lobular pneumonia were found. The remaining thirteen dogs recovered consciousness usually before the vein had been tied or the skin suture completed. They either lay quietly or staggered about unsteadily. On the following morning they were apparently normal except for local reactions about the neck wound. One of the thirteen dogs appeared abnormal mentally immediately following the experiment. Following his transfusion and removal from the table he was able to run about quite vigorously. However, he snapped and bit at inanimate objects, ate his feces, and four days following his transfusion killed and partially disemboweled one of the other transfused dogs in his cage. He had to be killed before he could be removed from the cage. I regret to say that his brain was not examined. Five of the transfused dogs were killed seven to ten days after their transfusion because of a severe cervical cellulitis, due probably in part to imperfect surgical asepsis at the time of transfusion. Aside from their local infection, the dogs apparently had recovered from the experimental asphyxia. The six remaining dogs showed no after-effects either direct or indirect.

From the foregoing it will be noted that of the fifteen dogs transfused, twelve recovered with apparently no ill after-effects that could be attributed to the asphyxia. Two of the fifteen transfused dogs died without regaining consciousness. One of these was probably fatally ill before the experiment. From necropsy findings of the second it might be suggested that death may have been due to agglutinins in his blood for the corpuscles with which he was transfused. The third dog developed symptoms quite typical of the manias sometimes seen in human beings following acute carbon monoxid asphyxiation. The possibility of an incidental rabies in this animal cannot, however, be ruled out, because the animal was disposed of before the brain could be examined.

The erythrocytes used in these transfusions had been preserved from three to seventeen days. Two dogs were transfused with corpuscles obtained seventeen days earlier, one dog with sixteen-day corpuscles, three with fourteen-day corpuscles, four with six-day corpuscles, and five with three-day corpuscles. The two dogs which died without regaining consciousness and the one which developed maniacal symptoms had been transfused with three-day corpuscles. Observations to detect hemoglobinuria, temperature disturbances, changes in the microscopic blood picture, etc., were not made. All of the control animals died.

CONCLUSIONS

Erythrocytes of some animals can be preserved intact over extended periods of time.

These corpuscles can again assume their physiologic function in another animal of the same species, and can successfully prevent death in carbon monoxid asphyxiation of this second animal, in about 75 per cent. of all cases in which indirect transfusion is begun while cardiac contractions can still be elicited.

The establishment of emergency stations where human erythrocytes could be obtained, just as pulmotor stations are now being maintained, should prove of invaluable service in saving the lives of human beings the victims of illuminating gas asphyxiation.

FOOD POISONING BY THE BACILLUS PARATYPHOSUS B

AN EPIDEMIC DUE TO THE ORGANISM ISOLATED FROM PIE

HARRY S. BERNSTEIN, M.D.
Pathologist, Rhode Island State Board of Health
AND
EZRA S. FISH, M.D.
Assistant Pathologist
PROVIDENCE, R. I.

During July, 1915, an epidemic of food poisoning occurred at Westerly, R. I., and in an adjacent township of Connecticut. The epidemic was characterized by symptoms of an acute gastro-enteritis. The symptoms followed the eating of pie, which was obtained at a restaurant in Westerly. It is estimated that sixty persons were made seriously ill, four of whom died.

At the inquiry, many witnesses testified to having eaten pie, purchased from the restaurant in question, and yet remained unaffected. It was, nevertheless, firmly established that all those who were affected traced their symptoms to the pie. The owner of the restaurant stated that the dough was mixed Friday, July 2, and that a batch of pies was made on the following day for Sunday and Monday. This batch consisted of coconut-custard, custard, squash, lemon, chocolate, berry and apple pies. The preparation of these food products differed in no way from that employed for many years previously.

The symptoms appeared from twelve to nineteen hours after eating. In some cases the symptoms appeared as early as four and a half hours. They were characterized by epigastric pain, a burning sensation

from fauces to stomach, extreme thirst, and spasmodic contractions of the calves of the legs. Vomiting was a constant symptom and was of about six days' duration. The vomitus was green. Diarrhea was also present and was associated with tetanus. The stools were of a pea-soup consistency, greenish, and extremely foul smelling. The green color of the stools persisted for many days. The number of the dejections varied from ten to twenty daily. The temperature was elevated, reaching 103 in some cases. The pulse was normal. Two of the patients had a herpetic eruption around the mouth, and in one other a generalized erythema appeared for twenty-four hours. One child of 8 was rendered unconscious for two or three days, and presented a marked rigidity of the neck. In one of the fatal cases, there was a suppression of urine. Most striking of all was the mental depression. Convalescence was protracted.

Two men and one woman died within four days after the onset of symptoms. The fourth person, a man, died three weeks later. The persons who died were all beyond middle age. The first fatal case was that of a man aged 49. Symptoms of marked severity came on seven hours after eating and proved fatal in thirty-six hours. Two other members of the family, who had eaten pie at the evening dinner, became ill, whereas four other members, who had not had any pie, were unaffected.

There was no unusual taste or odor to the pies to excite suspicion; and the symptoms followed the eating of all the different kinds of pie of which this particular batch consisted. The gradual increasing number of cases of poisoning gave rise to much alarm. The State Pure Food and Drug Commission united with the officials of the State of Connecticut to determine the cause of the epidemic. Sanitary surveys were made; samples of pies and materials used in their preparation were submitted for chemical analysis. Prof. Clifford B. Morrison of the Connecticut Experiment Station reported the absence of arsenic or heavy metals and of poisonous alkaloids or other organic compounds. A similar report was made by Prof. Franklin N. Strickland of Providence. Samples were also submitted to our laboratory for examination. It is noteworthy that the laboratory investigations were conducted after the acute stage of the epidemic had passed. No field work, which might have enhanced the value of this epidemiologic study, was rendered possible.

The following samples were received in half-pint jars, partially filled: (1) milk; (2) dough; (3) pie-shortening; (4) coconut-custard pie; and in addition there was a small quantity of (5) egg flour, contained in a paper package. The small amount of material precluded any attempt to isolate a ptomain by chemical means. Accordingly, the bacterial content of the specimens merited inquiry.

The milk had a sour odor; a moderate amount of curd was formed. Smears from centrifugalized portions showed a few cells; no streptococci were present. The bacterial count was 7,820,000 organisms per cubic centimeter. Smears were made direct from each of the four remaining specimens; bouillon, plain-agar slants, dextrose-agar stab cultures, and plates of plain-agar, dextrose-agar, and Endo medium were inoculated. Anaerobic cultures were also made; and some of the inoculated mediums were incubated at room temperature. One c.c. of each of the four bouillon cultures, containing the initial bacterial growth, was injected into the peritoneal cavity of guinea-pigs. The two animals, inoculated with the growth obtained from the pie mixture and dough, died after eighteen hours. Postmortem examination revealed marked edema of the abdominal wall and a diffuse peritonitis. Cultures from the heart's blood showed a mixed infection in which the *Bacillus coli communior* and streptococcus were present. The guinea-pigs inoculated with the bouillon cultures, derived from the pie shortening and egg flour, survived.

The twenty-four hours' growth on the Endo plates, which were seeded with an emulsion of the pie, contained a mixture of red and of transparent, colorless colonies. The latter were transplanted on slant-agar. They yielded a profuse growth of gram-negative bacilli. These bacilli in subsequent cultures showed a slight tendency to pleomorphism. They possessed motility and showed the following cultural characteristics: Litmus milk at first became slightly acid, the acidity giving way to a permanent alkalinity. Gelatin was not liquefied, but gas was produced therein. With Hiss carbohydrates serum-water mediums, dextrose, lactose, galactose, mannite and maltose showed acid and gas formation; lactose, saccharose, dextrin and salicin were unchanged.

An eighteen-hour bouillon culture of the organism, thus isolated from the pie mixture, and termed for convenience "Strain 4," was employed in the determination of its pathogenicity. Three animals were each inoculated with 1 c.c.: one rabbit subcutaneously, one guinea-pig subcutaneously, and one other guinea-pig intraperitoneally. The two guinea-pigs died over night. A diffuse peritonitis was present in each animal. The organism recovered from the heart's blood and peritoneal cavity possessed the same cultural characteristics as the one injected. It was a gram-negative, motile coccobacillus, producing colorless transparent colonies on Endo plates and a permanent alkalinity in litmus milk. The rabbit died seventy-two hours after injection. Cultures taken from the heart's blood and peritoneal cavity, twenty-four hours postmortem, were in turn transplanted on Endo plates. Colorless colonies were obtained identical in character with Strain 4.

Feeding experiments were also performed. A kitten was fed with portions of the pie and suffered no ill effects. Another kitten was fed on sterile milk, which had previously been inoculated with Strain 4. A mild enteritis resulted.

Through the courtesy of Dr. A. S. Briggs of Ashaway, a specimen of blood was received from a patient, aged 20, who "had quite severe symptoms after eating pie." The blood was collected twenty-four days after the onset of symptoms. It is particularly noteworthy that this patient gives no history of any illness of over two or three days' duration prior to the attack of food poisoning. The blood serum from this patient agglutinated the typhoid bacillus, the paratyphoid bacillus B and Strain 4 in the dilutions of 1:10, 1:40, 1:80, 1:100 and 1:200 (the latter dilution showed partial clumping). The paratyphoid bacillus A was agglutinated only in dilution of 1:10. The patient's serum also agglutinated the organism recovered from the hearts' blood of the guinea-pigs and of the rabbit which had been inoculated with Strain 4. Moreover, Strain 4 was agglutinated by an antityphoid serum.

Thanks to Dr. G. T. Swarts, ten dried specimens of blood were received from individuals who similarly had suffered ill effects from eating the pie in question. The

V. 191

specimens were collected one month after the onset of symptoms. Five of the specimens caused complete agglutination of Strain 4, three produced partial clumping, and two were negative. The question whether the organism isolated was capable of producing a soluble toxin invited solution. Accordingly a forty-eight-hour bouillon culture of Strain 4 was filtered through a Berkefeld filter. Two guinea-pigs and one rabbit were each inoculated with 1 c.c. of the bacteria-free filtrate. The animals developed no symptoms. Two animals were used as control, one guinea-pig was injected with sterile bouillon, and one other guinea-pig with the bouillon containing the growth of Strain 4. The latter died over night. All other observations were similarly controlled and repeated. In each instance, the observations found corroboration.

It is to be recalled that of the mixed cultures made from the ingredients of the pie, the bouillon inoculated with the dough proved fatal to a guinea-pig, as did the mixed culture from pie. The animals died either from the toxins in the food products or from the organisms present. It may well be assumed that Strain 4, if present, may have been overgrown by the streptococcus and the *Bacillus coli communior*. Since Strain 4 has been isolated only from the pie, the presumptive evidence is that the dough, also, contained the organism.

Thus the organism isolated from the pie mixture possesses the morphologic, cultural, pathogenic and immunologic characteristics of the Salmonella group. This group is composed of the *Bacillus paratyphosus* B, the *Bacillus suipestifer* and the *Bacillus enteritidis* Gaertner. It is noteworthy that the German school regards the *Bacillus paratyphosus* B, and the *Bacillus suipestifer* as identical species, applying the former designation if derived from human sources, and the latter if derived from animal sources. The English school, however, by means of agglutination and absorption tests, distinguishes between the two organisms. These tests of necessity were applied to Strain 4, as there was no opportunity forthcoming to determine the source of the food infection.

Rabbits were accordingly immunized against Strain 4, the *Bacillus paratyphosus* B, and the *Bacillus suipestifer*. A culture of *Bacillus suipestifer* was obtained through the courtesy of the American Museum of Natural History, New York. Three intravenous injections of a twenty-hour bouillon culture of each of the three organisms were administered to rabbits at fifteen-day intervals. The animals were bled approximately one week after the last inoculation. The first injection consisted of 0.001 c.c. of the living culture, the remaining two of 0.01 c.c. Rabbits injected with Strain 4 succumbed shortly before the second injection became due. The organism was recovered from the heart's blood and stools. Fortunately it was possible to obtain blood from one rabbit after it had survived a second injection of Strain 4. At that time the animal had a paralysis of the lower limbs and of the urinary bladder. This may account for the relatively low titer in the agglutinating properties of the serum.

The accompanying table indicates the agglutinating powers of each serum against Strain 4, the *Bacillus paratyphosus* B and the *Bacillus suipestifer;* also the effect on the specific agglutinin and co-agglutinins of each serum after saturation with each one of the three organisms in question. The similarity of the serum reactions, thus made evident, between Strain 4 and the *Bacillus paratyphosus B* establishes definitely the identity of the former. The *Bacillus enteritidis* Gaertner was not agglutinated by any one of the immune serums.

It will be noted, however (under heading 2), that Strain 4 does not remove all the agglutinins for the *Bacillus paratyphosus* B from a paratyphoid B serum. Repetition of the test yielded constant results. A similar anomalous reaction is recorded by Hutchens and Tulloch[1] in a strain of the *Bacillus paratyphosus* B isolated from yeast in a brewery. This yeast had been used as food for farmyard animals and produced symptoms of an acute enteritis.

The agencies whereby the *Bacillus paratyphosus* B gained access to the pie must of necessity remain a matter of conjecture. The cases of poisoning were limited to persons who purchased the food-product at this Westerly restauratnt. There had been no change in the personnel of the restaurant for several months, which makes the restriction of the epidemic in point of time difficult to explain. If we accept the view of Bainbridge, the infection originated from a human source, possibly a paratyphoid carrier.

The distribution of the *Bacillus paratyphosus* B in nature has given rise to much discussion. In Germany, bacilli of the paratyphoid group have been isolated

TABLE OF ABSORPTION TESTS

Serum	Agglutination Limits for		
	Strain 4	B. Paratyphosus B	B. Suipestifer
1. Strain 4, original titer.....	1,600	800	100
Absorbed with B. suipestifer....	1,600	400	<100
Absorbed with B. paratyphosus B	<100	<100	<100
Absorbed with Strain 4.....	<100	<100	<100
2. Bacillus paratyphosus B, original titer	3,200	6,400	1,600
Absorbed with B. suipestifer....	800	6,400	<100
Absorbed with B. paratyphosus B	<100	<100	<100
Absorbed with Strain 4.....	<100	800	<100
3. Bacillus suipestifer, original titer	1,600	800	6,400
Absorbed with B. suipestifer....	<100	<100	<100
Absorbed with B. paratyphosus B	<100	<100	6,400
Absorbed with Strain 4.....	<100	<100	6,400

from milk by Fischer (1903), from water by Conradi (1904) and by Priefer and Keyser (1902), from sausage by Hubener (1908) and by Rommeler (1909), and from goose by Sobernheim (1911). Moreover, Uhlenhuth (1908) and Seiffert (1909) have obtained the organism from the intestinal contents of healthy pigs.[2] It was noted by Conradi that food containing these organisms could be eaten by human beings without the production of untoward symptoms. Morgan, Savage and Bainbridge, however, have obtained negative results in the examination of pigs' feces.

The prevalence of the organism in man has been the subject of much investigation. Conradi found the bacilli present in twenty-nine cases out of 250 typhoid convalescents, in patients suffering from tuberculosis and other diseases, and in healthy individuals. Prigge and Sachs-Muke[3] examined the stools of 5,252 individuals and found the paratyphoid bacilli present in 108 cases, only thirty-eight of which showed symptoms of paratyphoid infection. Hubener and Viereck, in an examination of the stools of 4,000 soldiers, encountered the organism thirteen times in individuals who never

1. Hutchens, H. J., and Tulloch, W. J.: An Anomalous Strain of B. Paratyphosus (B), Jour. Path. and Bacteriol., 1913-1914, xviii, 431.
2. Quoted from Bainbridge, F. A., and O'Brien, R. A.: On the Paratyphoid Group of Bacilli, Jour. Hyg., 1911, xi, 68.
3. Prigge and Sachs-Muke: Paratyphusbazillenausscheidung bei Kranken und Gesunden, Klin. Jahrb., 1909-1910, xxii, 237.

presented signs of paratyphoid fever. Hubener recovered the organism twice in seventy-five examinations of the nasopharynx.[4] Negative findings, however, were obtained by Sobernheim, who searched for the *Bacillus paratyphosus* B in 1,000 samples of feces of normal individuals, by Seiffert who examined 600 specimens of feces, and by Morgan in a study of 303 stools from children.[5]

Bainbridge and O'Brien, in criticism of the findings of German investigators, have submitted the organisms which the latter isolated from varied sources to absorption tests. As a result, the organisms fall into two groups. The first group, the *Bacillus suipestifer*, consists of those strains which were derived from food or food-poisoning cases. The second group, the *Bacillus paratyphosus* B, was obtained from cases of paratyphoid fever or chronic carriers. Bainbridge and O'Brien are disposed to regard "the human alimentary canal (including the bile passages) as the normal habitat of *Bacillus paratyphosus* B, while admitting that paratyphoid 'carriers' may cause infection not only directly but also by contaminating sound food, just as is the case with typhoid carriers. Under these circumstances, it is to be expected that the bacilli may occasionally be found in food, polluted by a carrier, although they have not met with such an instance." [2] Moreover, they are convinced that the presence of the *Bacillus paratyphosus* B in healthy human beings is unknown in England. In this connection, the findings of Bonhoff are of unusual interest. In the bacteriologic examination of the heart's blood in 6,476 cases at necropsy, he isolated the *Bacillus paratyphosus* B from twenty-nine cases. Five of the twenty-nine cases fall into a group which the author classifies as bacteremia as a coincident finding (*reine Bakteriämien als Nebenbefund*). This group comprised one case each of senility, pulmonary tuberculosis and chronic alcoholism, and two cases of inoperable carcinoma.[6]

The importance of carriers of paratyphoid bacilli has been further emphasized by epidemics which owe their origin to them. Thus, Konrich[7] described an epidemic of paratyphoid fever affecting forty-four children in a surgical ward. A young girl, recently admitted to undergo treatment for rachitis, was held responsible because of the presence of the organisms in her stools. A similar outbreak of paratyphoid (B) fever, verified bacteriologically, involved sixteen surgical cases at a hospital in Roanoke, Va.[8] A colored boy who was employed as a helper in the kitchen was the probable source of the infection, "which was spread by finger conveyance from case to case in the wards." The first outbreak in England of an acute gastro-enteritis due to the *Bacillus paratyphosus* B is recorded by Bainbridge. The symptoms were identical with those described in the Westerly epidemic. Fourteen persons in four households became seriously ill. The organisms were isolated from two specimens of stools, and their identity determined by absorption tests. No food was held responsible, as the dates of onset varied. The exchange of visits between the households at the time of the epidemic suggests strongly the intervention of a carrier.[9]

In addition to the infections by contact mentioned above, there are epidemics recorded in which food material proved to be the vehicle of infection, because of contamination by paratyphoid carriers. Sacquépée and Bellot describe an epidemic of paratyphoid fever affecting nineteen in a French army corps of 250. The cook in camp had recovered a short time previously from an attack of paratyphoid fever. His blood agglutinated the *Bacillus paratyphosus* B, which persisted in his stools.[5] Similar epidemics of paratyphoid fever occurred in various Japanese camps on the island of Waiawa. A native who brought vegetables to these camps proved to have the bacilli in his stools, although he gave no history of any illness during the two previous years.[10] Of forty-five individuals who were taken sick after drinking some light beer, thirty-three agglutinated the *Bacillus paratyphosus* B; and in the stools in eight cases, the organism was present. It is supposed that the brewer had infected the product, which was of domestic manufacture.[11] French pastry was productive of acute symptoms in thirteen cases. The baker of the pastry was a recent convalescent from an attack of paratyphoid fever, which he had contracted from his son. The organisms were found in the urine of the baker. The food itself was not available for bacteriologic examination.[12] A fatal case, that of a private in the German army, yielded the *Bacillus paratyphosus* B in cultures from the intestinal contents, urine and spleen. The clinical symptoms were most acute in character. At the same time, there were among the civil population twenty cases of food poisoning due to the ingestion of sausages. From the stools of one of the victims, the *Bacillus paratyphosus* B was isolated.[13]

It may not be amiss to cite two other epidemics of food poisoning in which the organisms were recovered from the food product. Fried eel was responsible for symptoms in a family of six. Paratyphoid bacilli were obtained from specimens of the eel. The organisms were more numerous, however, in the center of the fried portions.[14] Most noteworthy of all is the food infection which occurred at Wrexham, England, in August, 1910. Many of the features of this epidemic was strikingly similar to ours at Westerly.[15] One hundred and seven persons in fifty-six families became seriously ill as the result of eating pork pies. Of this number five died. The symptoms were those of an acute gastro-enteritis, associated with herpes and mental depression. The pork pies originated from the same bakeshop. The *Bacillus paratyphosus* B was found in two specimens of suspected pork pies, and agglutinins for the organism in five persons who had eaten the pie in question.[16] The organism was also

4. Quoted from Job, M. E.: Les infections à paratyphus B: étude nosologique et épidémiologique, Rev. de méd., 1913, xxxiii, 181.
5. Quoted from Bainbridge, F. A.: The Etiology and Epidemiology of Paratyphoid Fever and Food Poisoning, Proc. Roy. Soc. Med., London, 1910-1911, iv, Epidemiolog. Sec., p. 51.
6. Bonhoff, F.: Ueber Paratyphusbazillenbefunde an der Leiche, Virchows Arch. f. path. Anat., 1914, ccxvi, 321.
7. Konrich: Eine Paratyphusepidemie in einem Krankenhause, Klin. Jahrb., 1908, xix, 247.
8. Lumsden, L. L.; Freeman, A. W., and Foster, W. B.: Paratyphoid Fever: Report of an Outbreak in a Hospital at Roanoke, Va., Pub. Health Rep., 1913, xxviii, 1041.
9. Bainbridge, F. A.: An Outbreak of Gastro-Enteritis Due to B. Paratyphoid B, Brit. Med. Jour., 1910, ii, 1515.
10. Sinclair, A. N.: An Epidemic of Paratyphoid Fever, Origination from a Carrier and Dissemination by Vegetables, Am. Jour. Trop. Dis. and Prev. Med., 1914, i, 612.
11. Kling, C., and Petterson, A.: Verbreitung von Paratyphus und ähnlichen Darmkrankheiten durch Dunnbier, Centralbl. f. Bakteriol., Part I, 1914, lxxiv, Orig., p. 467.
12. Prigge and Sachs-Muke: Beobachtungen bei zwei Nahrungsmittel verursachten Paratyphusepidemien, Klin. Jahrb., 1909, xxi, 225.
13. Oesterlen, O.: Zur Kasuistik der Paratyphus B, Deutsch. mil. ärztl. Zschr., 1911, xl, 655.
14. Müller, R.: Fischfleischvergiftung durch Bakterien der Paratyphus-Enteritisgruppe, München. med. Wchnschr., 1914, lix, 471.
15. Williams, D. L.: Food Infection at Wrexham, Jour. Roy. Inst. Pub. Health, London, 1910, xviii, 725.
16. Trommsdorff, R.; Rajchman, L., and Porter, Agnes E.: A Severe Outbreak of Food Infection Caused by a Paratyphoid Carrier, Jour. Hyg., 1911, ii, 89.

found in the stools of the head cook. She gave no history of ever passing through any typhoidlike illness, and to the best of her belief, she had never before caused a similar outbreak.

It must not be overlooked that food may continue to harbor active pathogenic organisms, even after subjection to cooking temperatures. Of course, the method of preparation and the physical character of the food determine the extent of penetration by heat. In the interesting experiments performed by Sawyer,[17] it was shown that a pan of spaghetti baked for half an hour in an oven, the temperature of which ranged between 207 and 214 C., had a temperature of only 28 C. in the middle, and 48 C. near the bottom. The spaghetti had been inoculated, for the purpose of investigation, with a culture of typhoid bacilli. Living bacilli were recovered from a depth of 2½ inches.

SUMMARY

The purport of this communication is:

1. To record an outbreak of food poisoning due to the *Bacillus paratyphosus* B which affected sixty individuals, of whom four died.

2. To indicate that the vehicle of infection was pie, from which the organism was isolated.

3. To emphasize the necessity of protecting public food supplies from "disease carriers."

17. Sawyer, W. A.: Ninety-Three Persons Infected by a Typhoid Carrier at a Public Dinner, THE JOURNAL A. M. A., Oct. 31, 1914, p. 1537.

MULTIPLE METASTATIC SARCOMAS OF THE LUNGS

WITH REPORT OF A CASE

OLIVER P. HOLT, M.D.
Senior Physician, Cincinnati General Hospital
AND
HELENA T. RATTERMAN, A.M., M.D.
House Physician, Cincinnati General Hospital
CINCINNATI

Sarcoma of the lung whether primary or secondary is very rarely found. So few cases come under the observation of any one individual that the study of sarcoma of the lung depends almost entirely on reported cases. The literature on the subject is very limited. The study of various records seems to give such different results that the complaint is general that too few cases are reported and those few not carefully enough.

The clinical aspects of metastasis secondary to malignant disease are of considerable interest and importance. When the existence of a primary tumor is obvious, or when such a tumor has been more or less recently removed, evidences of disease in other organs must necessarily excite alarm and arouse suspicions of a metastatic manifestation.

Such a relatively straightforward sequence of events, however, very rarely exists. The primary growth may have been overlooked or the nature of the tumor, removed by operation, may have been in doubt. Again the interval between the primary growth and the secondary development may be so considerable that suspicion is at rest.

The case reported here, fortunately, has been observed throughout the course of its malignant developments and the history is complete from the very beginning of the primary growth to the fatal termination due to multiple metastatic sarcomas of the lungs.

S. S. Burt[1] in 1900 reviewed all cases of metastatic sarcomas of the lungs recorded in the *Johns Hopkins Reports, the Proceedings of the Pathological Society of Philadelphia* and the *Boston Medical and Surgical Journal*, and reports one himself. In all there are twenty cases. In only three are the metastases multiple and in two of these there is other involvement than just the seat of the primary tumor and the lungs. His own case is very similar to the one reported here, in that the primary growth involved an extremity, which was amputated because of it, and that there followed multiple metastases in the lungs, without any recurrence of the growth at the site of amputation or elsewhere than in the lungs.

F. R. Greenwood[2] in 1899 reports a case in which the same order of events prevails, with, however, this striking difference that in his case there was a general glandular involvement.

A. A. Stevens[3] gives a brief but comprehensive review of data collected by different observers. He discusses both primary and secondary malignancies of the lungs and reports three cases which came under his own observation, one a primary sarcoma of the right lung, one an endothelioma of the right pleura with metastases in the right lung, the third a hypernephroma of the left kidney with secondary sarcoma of the left lung.

A case recently reported is one by T. M. Martin[4] in which the findings in the lungs were secondary to sarcoma of the uterus.[5] The following case was observed in the Cincinnati General Hospital:

History.—V. B., a widow, aged 54, was admitted to the West Medical Service, May 16, 1915. Her chief complaint was pain in the left lower chest, through and through the lung at the scapular level.

Family History.—Her father had died of pneumonia after a brief illness, her mother of old age. She was one of a family of eleven children, three of whom died in infancy; the others were living and well. Her husband had been shot through the lung in the Spanish-American War. He died in 1908 of pulmonary hemorrhage. There was absolutely no history of tuberculosis or malignancy.

Past History.—In early childhood the patient had had measles, chickenpox, whooping cough and mumps. At the age of 22 she was ill with a slight attack of peritonitis, from which she fully recovered. At the age of 44 she had an attack of pneumonia with pleurisy, which ran an acute course and went on to prompt and complete recovery.

In the summer of 1912 patient noticed a firm swelling which appeared over the upper part of the right tibia just below the knee. This lump gradually grew in size and in September, 1913, was opened to allow drainage. No pus was found. The incisions were allowed to heal and had almost closed when there was evidence of an active tissue proliferation with protrusion of the tumor substance at the site of the first openings. The diagnosis of sarcoma was made, and Dec. 19, 1913, the leg was taken off above the knee by Dr. W. D. Hamilton at Mount Carmel Hospital, Columbus, Ohio. Dr. Coon, pathologist to that hospital, reported the specimen to be oat-grain cell sarcoma.

Onset.—During the winter of 1914-1915 patient began to feel pain under the left shoulder blade and under the left

1. Burt, S. S.: Philadelphia Med. Jour., 1900, vi, 545.
2. Greenwood, F. R.: Birmingham Med. Rev., 1899, xlvi, 88.
3. Stevens, A. A.: Med. and Surg. Rep. Episc. Hosp., 1913, i, 333.
4. Martin, T. M.: Brit. Med. Jour., 1913, ii, 939.
5. In addition to the references already given, the following will be found of interest:
Prentiss, D. W.: Tr. Assn. Am. Phys., 1893, vii, 191; Med. News, Phila., 1893, lxiii, 13.
Treutlein, A.: Centralbl. f. allg. Path. u. path. Anat., 1902, xiii, 520.
Zinn: München. med. Wchnschr., 1894, xli, 197.

arm. She took one cold after another. She coughed considerably in spells but expectorated very little and seldom. During one severe coughing spell she brought up an old blood clot with some phlegm. She lost weight steadily and rapidly. There were no night sweats. There were no gastric or bowel symptoms.

Examination.—Patient was a well developed but very poorly nourished white woman, aged 54 years, pulse 80, respiration 28, temperature 101. Her face was very emaciated and gaunt looking although her expression was cheerful and hopeful. Her voice was clear.

The right leg had been amputated in the middle third of the thigh. This was the only deformity found. With the exception of the chest findings, the examination revealed nothing abnormal. There were no glandular enlargements. There was no enlargement of the liver or spleen.

The chest findings were interesting. The respirations, as noted above, were somewhat rapid. The expansion was fairly good but the excursions were more limited on the left side. The supraclavicular and infraclavicular fossae were deep and well marked, especially on the left side. There was dulness over both apices and dull areas scattered over both lungs. There was a large area of dulness in the left axilla extending anteriorly. The breath sounds were roughened and the breathing bronchovesicular over the dull areas with medium moist and dry râles during and at the end of expiration.

The heart showed nothing other than an accentuation of the second aortic sound and an almost imperceptible arrhythmia at times.

The examination of the urine was negative for pathologic findings.

The blood findings were as follows: hemoglobin, 95 per cent.; erythrocytes, 4,460,000; leukocytes, 10,250; polymorphonuclears, 70 per cent.; large lymphocytes, 3 per cent.; small lymphocytes, 25 per cent.; systolic blood pressure, 122 mm.; diastolic, 76 mm.; Wassermann reaction, negative; Abderhalden malignancy test, positive.

No tubercle bacilli were found in the sputum.

The clinical diagnosis was made of metastatic sarcomas of the lungs, and this was confirmed by the Roentgen-ray findings.

Roentgenoscopic Findings.—Dr. Sidney Lange, official roentgenologist to the Cincinnati General Hospital, reported on the Roentgen-ray examination as follows: Roentgenogram shows multiple rounded opaque areas scattered throughout both sides of chest. These areas vary in size from that of a 5-cent piece to that of a silver dollar. They look typically like malignant metastatic deposits, in all probability sarcoma.

Treatment.—The treatment was entirely palliative, narcotics and sedatives. The patient was cheerful throughout, but failed steadily. The course of the illness was uneventful, the patient at times running a slight elevation of temperature, but at no time more than 101.5. Toward the end she refused nourishment and finally fell into a deep stupor. She died June 20, 1915, without regaining consciousness.

Necropsy.—Dr. P. G. Woolley, pathologist to the Cincinnati General Hospital, reports on the necropsy as follows: The body was that of a slight, emaciated, decidedly anemic woman, 5 feet high. The right leg had been amputated a few inches above the knee for some considerable time, for the scars were atrophic and well formed. There was no enlargement of the remaining part of the femur, and dissection showed no abnormality of the bone or periosteum. The eyes were normal. There were no evidences of trauma or injuries of any sort on the body. The peripheral lymph glands were not palpably enlarged. Postmortem lividity and rigidity were present. There was a slight bulging of the thorax to the right of the median line. The mammary glands were atrophic.

When the chest was opened the lungs did not collapse. The diaphragm reached to the fifth rib on the left and to the fifth interspace on the right. In the left pleural cavity there were recent fibrinous adhesions laterally and anteriorly above the level of the nipples; in the right there were similar adhesions over the posterior part of the upper lobes. All these adhesions were over nodular masses situated in the lungs beneath the pleura. Beneath the sternum in the right lung were several of these nodules between which and the sternum were well-formed fibrous adhesions.

Both lungs were filled with large and small nodular growths, which varied in size, from a small pea (in one case) to a small orange (8 cm.). In the left lung most of the nodules were softened and, when traction was put on the lung, they ruptured and the contents came forth looking somewhat like moist cottage cheese. In one instance, a nodule was situated in an infarct caused (apparently) by pressure of another mass on the vessels of the part. The smaller, better nourished growths were clear, pearly white in color, were rounded or oval, and had something of the appearance of soft fibromas; that is, they were indistinctly striated or lamellated and juicy. Older ones, which had not undergone distinct softening, were often darker in color, sometimes with lines of greenish or olive across the grayish surface of the growths. The pleura above all the subpleural nodules was inflamed.

The other organs showed no noteworthy changes. All were atrophic and pale and apparently fibroid. This was especially true of the kidneys, spleen and heart. In the aorta, at the arch, was a patch of senile sclerosis with calcification. There were a few plaques elsewhere in the aorta.

The uterus was fibroid; in the wall were several small fibroids. The endometrium was hyperplastic, especially in the fundus, where there were two polypi, a few millimeters long and pedunculated. The right ovary was cystic.

The mesenteric lymph glands were not enlarged. The intestines showed no abnormality except that the transverse colon passed across the cavity 2 inches below the navel.

Microscopic examination of the tumor masses showed them to be spindle cell fibrosarcomas, of the short spindle cell variety, with a marked tendency to perivascular arrangement.

The interest in this patient centers in the completeness of the study of the case, which we were able to follow from the very beginning of the illness to the final microscopic examination.

V. 191

CREEPING ERUPTION (LARVA MIGRANS) OF THE SKIN

PARTICULARLY IN REGARD TO ITS HISTOLOGIC FEATURES, INCLUDING THE DEMONSTRATION OF THE BURROW AND THE LARVA IN THE EPIDERMIS *

FRANK CROZER KNOWLES, M.D.

Instructor in Dermatology, University of Pennsylvania, School of Medicine; Clinical Professor of Dermatology, Woman's Medical College of Pennsylvania

PHILADELPHIA

The various dipterous invasions which lead to a destructive or purulent inflammation, resembling furuncles, abscesses and doughy tumors, such as are caused by the African cayor worm, the larva of *Ochromyia anthropophaga* (Blanchard), the various muscidae, the *Hypoderma bovis,* ver-macque, etc., are so diverse in their clinical aspect from the present case that they will not be considered in this communication.

Creeping eruption which is a special variety of animal parasitic infection is of rare occurrence. The causative larva has been discovered by but five investigators, namely, Sokolow,[1] Samson,[2] Wosstrikow and Bogrow,[3] and Rudell,[4] the first four being Russians

* From the Ayer Laboratory of the Pennsylvania Hospital. Read before the College of Physicians of Philadelphia, Nov. 3, 1915.

1. Sokolow: Arch. f. Dermat. u. Syph., 1897, xxxviii, 153.
2. Samson: Arch. f. Dermat. u. Syph., 1897, xli, 367.
3. Wosstrikow and Bogrow: Arch. f. Dermat. u. Syph., 1908, xc, 323.
4. Rudell, G. L.: Creeping Eruption, THE JOURNAL A. M. A., July 26, 1913, p. 247.

and the fifth an American. The histologic examination has been successfully carried out in but three cases, including the present instance. Complete microscopic findings, including the demonstration of the burrows, have been presented by Lenglet and Delaunay,[5] Rille and Riecke,[6] and myself. The efforts

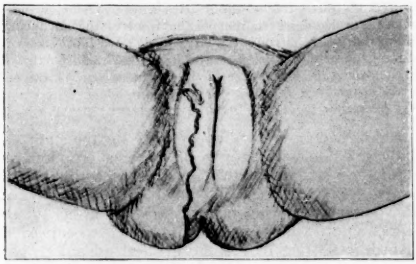


Fig. 1.—Creeping eruption involving the right labium majus.

of Dickinson, T. Fox and Duckworth, who examined the tissue from Lee's first case, were negative.[7] Hamburger[8] was able to demonstrate, in his example of the affection, only the phenomenon of an acute inflammation of the skin. I, alone, have been able to discover the larva in sections.

The first case of this disease was reported by Robert Lee in 1874, under the caption "creeping eruption"; Crocker[9] recorded an instance in 1892, terming the disease "larva migrans"; Sokolow mentioned cases in Russia in 1888; Neumann[10] reported an instance in 1895; Kaposi[11] recorded the first case in Austria in 1898. The first American cases were reported by Van Harlingen[12] in 1902, Stelwagon[13] in 1903, and Hamburger in 1904. Other American cases have been recorded by Shelmire,[14] Hutchins,[15] Moorhead,[16] Gosman,[17] Haase[18] and Kirby-Smith.[19] The disease has also been reported from Bulgaria, France, the Kongo and Arabia. The disease is rather prevalent in Russia, particularly the eastern portion. Samson saw nine cases in three years; Sokolow has seen from two to three yearly; Wosstrikow and Bogrow have encountered from two to three cases each year during the last two decades.

Fig. 2.—Creeping eruption involving the right buttock. Note the gyrating character of the track. The two dark spots are areas in which nitric acid was unsuccessfully employed.

The disease is particularly prone to attack children, although in Russia young peasants working in the fields furnish most of the cases. According to Hamburger, of eleven cases in other countries than Russia up to 1904, eight occurred in children.

The seat of predilection for the attack is the uncovered portions of the body, particularly the hands, the feet and the face, although quite a number of instances have been recorded on the buttocks or near the genitalia; five out of eleven cases developed in the latter region (Hamburger). According to Rille and Riecke, the axillae and pubic regions may be attacked. No burrows have ever been reported as occurring on the scalp or bearded regions. Samson has recorded cases in which the mucous membranes of the mouth, the nose and the conjunctiva have been attacked.

Creeping eruption may be initiated with an itching sensation, but more often the case comes to observation a considerable period after the burrowing has been inaugurated. Frequently a red creeping line reveals itself without subjective symptoms. More often, however, a red spot the size of a finger nail appears, from which the line takes its beginning. Lee demonstrated a small slightly reddened papule, pinhead in size. According to Van Harlingen it starts as a vesicle.

The beginning line is light red, while the older portions of the channel are of a dark red shade. The line is from 1 to 4 mm. in width and elevated approximately 0.5 mm. Both Hamburger and Van Harlingen found vesicles capping the line which suggested somewhat the burrow of scabies. Lee and also Stelwagon found a beadlike appearance, suggesting in the former's case the appearance of a lymph channel. Bruno[20] discovered little irregularities along the track of the line which he considered as points of defecation, thus heightening the resemblance to the lesions of scabies. In most of the cases the burrows are unbroken.

The characteristic symptom is the progressive character of the burrow. Sokolow believes that the beginning burrowings are always in a straight line, and

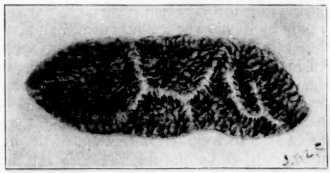


Fig. 3.—Drawing of excised skin, showing the appearance of the burrows through a magnifying glass.

toward their end they become wavy. In the majority of cases only one red line is discernible. In the cases of Crocker, Rille, Stelwagon, Haase and Rudell two lines were present; while in those of Kaposi, Schmidt[21]

5. Lenglet and Delaunay: Ann. de dermat. et de syph., 1904, iv, 107.
6. Rille and Riecke: Handbuch der Hautkrankheiten, Mracek, 1909, iv, Part 2, p. 178.
7. Lee: Tr. London Clin. Soc., 1874, viii, 44; ibid., 1884, xvii, 74.
8. Hamburger: Jour. Cutan. Dis., 1904, p. 217.
9. Crocker: Diseases of the Skin, Ed. 2, p. 926.
10. Neumann: Verhandl. d. V Cong. d. Deutsch. dermat. Gesellsch., 1895 (1896), p. 95.
11. Kaposi: Wien. klin. Wchnschr., 1898, p. 399.
12. Van Harlingen: Am. Jour. Med. Sc., September, 1902.
13. Stelwagon: Jour. Cutan. Dis., 1903, p. 502; ibid., 1904, pp. 359, 381.
14. Shelmire: Jour. Cutan. Dis., June, 1905.
15. Hutchins: Jour. Cutan. Dis., 1906, p. 270; ibid., 1908, p. 521.
16. Moorhead: Texas Med. News, February, 1906.
17. Gosman, G. H. R.: Two Cases of Creeping Eruption, THE JOURNAL A. M. A., Jan. 1, 1910, p. 38.
18. Haase: Jour. Cutan. Dis., 1910, p. 393.
19. Kirby-Smith: New York Med. Jour., March 13, 1915.
20. Bruno, quoted by Samson (Footnote 2).
21. Quoted by Hamburger (Footnote 8) and also by Rille and Riecke (Footnote 6).

and myself three lines were demonstrated. The development of the line takes place with a rapidity which varies, now curving and looping, now adopting a straight course and traversing in twenty-four hours from 1 to 17 cm., the greatest progression having been observed in Crocker's and Lee's cases, 7 and 4½ inches, respectively.

The line does not branch. It may remain passive for hours and even days, and then may resume

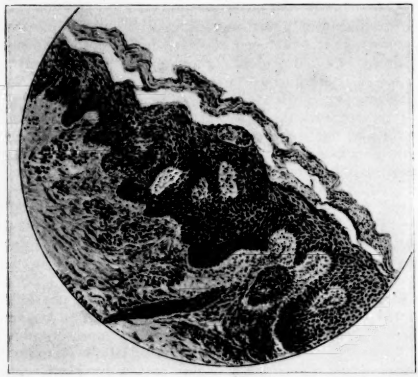


Fig. 4.—Drawing made from the microscope, showing a newly-made burrow. The oval body with the clublike projection, in the central and lower portion of the burrow, may be noted; also the elongation and broadening of the rete pegs and a round cell infiltration in the papillae and the upper corium, chiefly in the neighborhood of the blood vessels.

its gyrations. The progression of the line may be observed only during the night, as in Haase's case, or greater progress may be made during this period, as noted by Rudell. As the red line proceeds the older portions fade, leaving a pigmented tract behind. As a rule the burrows are superficial and the erythema is generally removable under pressure. Notable exceptions were, however, observed by Sokolow, who recorded a case in a brunette which showed a distinct scarring. Schmidt also recorded a resulting cicatrix.

In regard to the length of progression of the larva, in Crocker's case the burrowing was followed over a period of two and one-quarter years; after covering a large portion of the cutaneous surface, it ceased its activity only by its destruction because of an accidental suppuration in the neighborhood. The reverse was observed in Matchinsky's case,[21] in which the activity of the larva was limited in its gyrations to the cheek, for a period of two months.

According to the Russian authorities, the larva resides from 0.5 to 1 cm. from the end of the burrow. Samson states that by putting pressure on the skin and by employing a magnifying glass the larva can be seen in some cases as a black point, in the unaffected skin, slightly in advance of the actively extending end of the channel. This black point was observed immediately in advance of one of the burrows in the present case.

Two instances of this affection have been under my care, both occurring in children, the second of which forms the basis of this communication.

G. D., a well-formed girl, aged 20 months, visited my office, Sept. 6, 1912, with a typical case of creeping eruption, which had started August 22. The serpiginous, gyrating lines (there were three distinct burrows) involved palm-sized areas on both buttocks and the upper portion of the mons veneris. The vaginal mucous membrane was unattacked. An attempt was made to destroy the larvae with nitric acid, and as both applications proved a failure, Dr. Edward B. Hodge excised all three tracts. Four days after excision, insufficient tissue having been removed in front of the advancing end of one of the burrows, the larva made a fresh progression at the edge of the excision on the left buttock and burrowed down toward the lower edge of the left mons veneris, traveling a distance of 2 inches in twenty-four hours. Since the last operation there has been no recurrence.

I have had an unusual opportunity for the study of the histopathologic features of creeping eruption, as all of the passages were excised in their entirety. All of the tissue was cut serially, and 3,000 sections have been examined during many hours of the last three years. Quite a number of stains have been employed in order to bring out to the greatest advantage the various salient features. The investigation has been crowned with success, in that fully 150 sections show excellent views of the burrows, and thirty present various portions of the larvae. The excellent treatises of Rille and Riecke, and of Langlet and Delaunay pertaining to this disease, particularly that of the former, have been consulted freely and frequently, and their findings coincide almost absolutely with mine, excepting that in addition, I have been successful in finding the larvae in sections. Their deductions form a partial basis for my results.

All varieties of passageways were found, longitudinal, transverse, and because of the winding character of the burrows and the various planes in which they were cut, those of a very irregular shape. Some

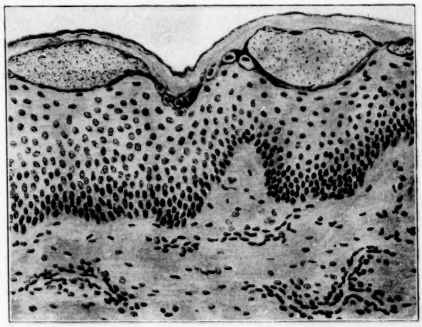


Fig. 5.—Photograph of histologic drawing from the case of Rille and Riecke, showing a transverse section of three burrows, two large and one small, at the junction of the horny and rete layers (Mracek's Handbuch der Hautkrankheiten).

of the channels were clear of contents, resembling markedly those found in scabies (Hartzell), others were partially filled, while the majority were entirely blocked up. The burrows were, however, quite different from those made by the *Acarus scabiei* in that they were much larger and were located in the lower portion of the horny layer at the junction with the rete and also in the upper portion of the rete Malpighii,

V. 191

rather than as in scabies in the middle and upper portion of the stratum corneum.

As a general rule the upper boundary of the passageway consisted of a few flattened, dark granular cells together with the horny layer. The floor was composed of rows of rete cells; in no place was the burrow in contact with the corium. The microscopic picture shows the passages in almost all sections to be located in the upper portion of the rete. The undermining work of the parasite was also found, in a few sections, in the lower portion of the horny layer exclu-

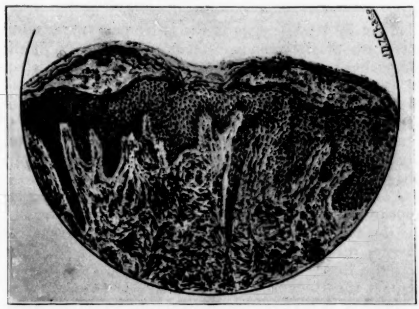


Fig. 6.—Histologic drawing of the author's case, showing a transverse section of two burrows at the junction of the horny and rete layers. Older burrows than the other depicted (Fig. 4), the cavity completely filled. There is widening of some of the rete pegs, elongation and narrowing or others. There is round cell infiltration in upper corium. Compare with Figure 5.

sively. The diameter of the burrow varied from 0.25 to 0.75 mm.

The stratum corneum is not changed from the normal in breadth and thickness, excepting that it is bulged over the passageways. It was intact in all sections. The covering of the passage consisted of elongated granular cells without a sharp contour but very distinct nuclei. These nuclei were flattened and some almost linear. The lateral and outer boundaries were chiefly composed of separate cells of the stratum germinativum, epithelial cells with distinct nuclei which are also mostly flattened. Both the upper and lower bounds of some of the passages consist of cells of the granular layer. Three or four rows below the burrows the cells have a normal configuration. The remaining cells of the stratum germinativum and the basal layer are somewhat edematous, and the nuclei are found in a large degree to be undergoing mitosis.

The character of the contents of the passageways varies considerably; the new channels may be entirely free and open, but as they become older they are observed to be more and more completely blocked. There is observed in comparatively newly bored channels a refracting uniform substance which is broken up with numerous small round granules. Later these granules are observed to be of unequal size and shape, round, irregularly long or oval. They are found in large numbers without a vestige of regular arrangement or grouping. Rille and Riecke suggest that they are of cell derivation, probably a degeneration of the granules of the cell nuclei. It has occurred to me as a possibility that some at least are the fecal discharge from the larva, as is found in sections of scabies. The passageways also contain swollen, degenerated, indistinctly outlined epithelial cells; numerous nuclei without a cellular surrounding, which vary considerably in their staining characteristics, some distinct while others are only faintly colored; eosinophils, and less numerously lymphocytes and polymorphonuclear leukocytes. The Mallory connective tissue stain brings out vividly a considerable amount of fibrin contents in the burrows. There is also a large amount of granular and cellular débris.

In the neighborhood of the burrows the rete pegs are either contracted and elongated or broadened, and there is therefore a corresponding contraction and narrowing of the papillae. These changes are, however, found in only a portion of the sections. There is a considerable diversity of pathologic findings in the various fields; in some the corium is absolutely normal, while in others there is an inflammatory accumulation of cells in the papillary layer. In some sections, there is an aggregation of cells in the immediate neighborhood of the capillaries of the papillae. These cellular infiltrations have also been observed surrounding the other blood vessels of the cutis; peripherally around the hair follicles and also the sebaceous glands. A few round cells were noted, in some sections, around the coils of the sweat glands. In a few instances the broadened pegs of the rete were invaded by a dense cellular infiltration which also extended considerably down in the corium. The greatest round cell accumulations are found in the neighborhood of the papillary bodies, and then only in a few sections, and only to a much lesser degree in other portions of the corium. The blood vessels are dilated, with a surrounding cellular infiltration, some filled with blood corpuscles and others empty. The elastic fibers and collagen are normal.

As the parasite which burrows in creeping eruption has never been discovered in sections, I have had to base my study on the characteristics of the larva picked

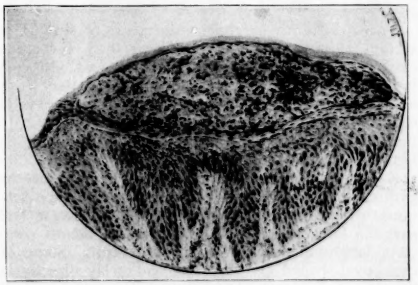


Fig. 7.—Drawing under high power, showing a transverse section of a burrow, filled with irregularly shaped granules, swollen, degenerated, indistinctly outlined epithelial cells, numerous free nuclei, eosinophils, lymphocytes, polymorphonuclear cells, fibrin and cellular and granular débris. Elongation of the rete pegs and a round cell infiltration in the corium are also seen.

from the burrow and examined microscopically, and for a working basis have had to study the *Acarus scabiei*, although quite different from the present larva, as it appears in skin tissue.

In about thirty sections, cut serially from the different passages, there was found in the upper portion of the rete, with a few flattened epithelial cells above and the normal rete cells below, an oval body of a definite

structure consisting of a granular looking material and several dark points around the circumference and an attached clublike projection closely conforming to the tail of the larva. This oval body with a distinct capsule was found in eight serial sections, and is thought to be either an egg of the larva or a portion of the parasite itself. In another series of sections, from another track, there were twelve serially cut, which showed three of these oval bodies, closely in contact, with the same characteristics of the one just

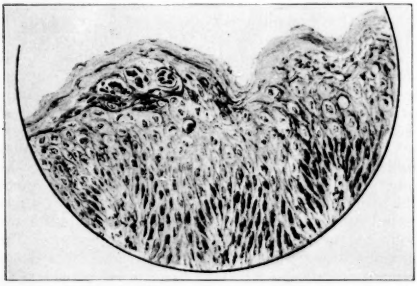


Fig. 8.—Drawing showing the three oval bodies, close together, in the rete, probably sections of the larva cut transversely, referred to in the text. Mitotic figures in the nuclei of the rete cells are distinctly shown.

described and in the same position in the rete. In still a third series of sections, from the remaining burrow, ten showed six complete segments of varying size, oval and somewhat irregular in shape, of the same texture of those just described, with two distinct clublike processes, the latter evidently the tail attachments of the larva. The latter was found in the upper portion of the rete in the same relative position as those that have just been mentioned.

The *Acarus scabiei* has been carefully studied in section (Unna), and the organized body formation closely conforms to the first body depicted, although it has not the clublike projection. The latter series of oval and irregularly shaped bodies with the typical clublike processes conform so closely to the description of the larva migrans (Sokolow) that I have no hesitancy in stating that all of these oval-like bodies are sections of this parasite, some, because of the gyrating channel and the various planes of the sections, showing a transverse, others a transverse and partially longitudinal, and still others an almost complete longitudinal view of the organism. Some of these oval-shaped and irregular bodies lay directly in the burrow; others were in immediate contact with it, while others were in the same location in the epidermis as the burrow was found.

The organism causing this affection was originally discovered by Sokolow, and this author states that it measures from 1 to 1.5 mm. in length and 0.5 mm. in width, it has ten segments, and is provided with hooklets, better developed at the head end, which apparently possesses two suckers. At the tail end are two clublike processes. In the interior are two tubes.

The zoologic classification of the parasite causing creeping eruption is still not definitely settled, although the majority of dermatologists and entomologists, particularly Cholodkowsky[22] and Porchinsky,[23] regard either the *Gastrophilus hemorrhoidalis* or the *Gastrophilus pecorum* as causative, notwithstanding the suggestion of Brauer and Handlirsch[23] that it is of the genera Tetrangchus and the species Telarius. As Sokolow found black nits on the hairs, it points strongly toward the *Gastrophilus hemorrhoidalis*.

Samson and also Hamburger give an explanation of the manner in which, probably, the patient is infected by the larva of the gastrophilus. The *Gastrophilus hemorrhoidalis*, a species of oestrus, deposits its eggs on the lips and the nose of the horse, and the larvae attach themselves to the bowel as well as the anus. The bot-fly lays its eggs in the latter part of the summer, and the larvae are probably transmittted to the stomach of the horse, where they attach themselves in varying numbers to the mucous membranes and there they remain during the winter season. The next summer they loosen their hold, pass through the intestine, and burrowing into the ground, they further undergo metamorphosis into the pupa, from which the imago or adult bot-fly emerges in a few weeks.

A considerable number of the cases of this affection appear during the summer months, thus carrying out the theory that they are derived from the ground after passing through the intestine of the horse. Crocker and also Lenglet and Delaunay thought the snails resident in the vineyard were the hosts of the parasites. Stelwagon states that five patients of his, attacked by the affection, had been residents of a watering resort. As the majority of all of the cases have been reported in Russia, in those laboring in the fields, this again tends to support the theory of origin as promulgated by Samson.

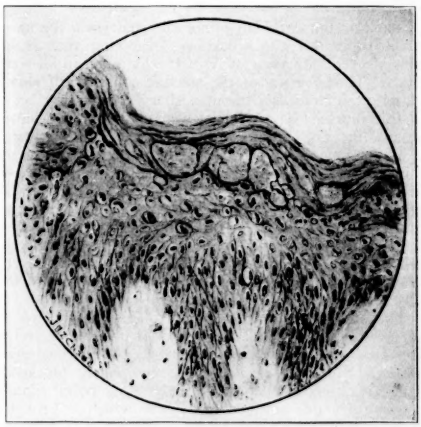


Fig. 9.—Drawing showing a longitudinal section of the larva. Six sections of the body and the two clublike projections, which are characteristic of the tail of the organism, are distinctly shown, located in the upper portion of the rete layer of the epidermis. The rete pegs are elongated, and numerous mitotic figures are observed in the nuclei of this layer.

The incubation of the disease is unknown. Crocker believed it to be from four to six weeks. Samson

22. Cholodkowsky, quoted by Sokolow (Footnote 1).
23. Quoted by Rille and Riecke (Footnote 6).

thought the shortest period of incubation to be six days. In the instance reported by Brodier and Fouquet[23] it seemed to be less than twenty-four hours, while Lenglet and Delaunay set a period of three days.

There is still a considerable amount to be learned in regard to this interesting affection. Creeping eruption is gradually, however, being elucidated; first, with the finding and probably correct classification of the organism (Sokolow); second, with the determination of the location of the burrow in the skin and the other pathologic findings, and third, by the present investigation, which shows the larva in epidermic tissue.

2022 Spruce Street.

TRANSPLANTATION OF BONE FOR NONREGENERATION OF THE TIBIAL SHAFT

MELVIN S. HENDERSON, M.D.
ROCHESTER, MINN.

A girl, aged 6 years, was brought to the Mayo Clinic for consultation and treatment, Nov. 20, 1912. Seventeen months before she had had a typical attack of acute osteomyelitis of the left tibia. On the seventh day an abscess was opened and during the next fortnight several more collections of pus were incised and evacuated. Two months after the onset a subperiosteal resection of the entire shaft of the left tibia was performed by the attending surgeon. At the time of our examination there was nonregeneration to the extent shown in Figure 1. The child was wearing a brace which enabled her to walk without crutches. The fibula was quite enlarged as a result of the increased function demanded of it. Since the sinuses had been healed only two months, we advised deferring operative interference for three months to make sure that the infection had become quiescent, and to see if by any chance more regeneration would occur, thus eliminating surgery. At the end of this time the leg still looked clean, but no further regeneration had occurred.

Feb. 14, 1913, a piece of bone 4½ inches long and three-eighths inch wide was removed from the opposite tibia and placed in a warm salt cloth while the bed was prepared for it in the affected leg. The periosteum was retained on the transplant, which was wedged into the upper fragment, and side-to-side apposition to the lower fragment was secured. Holes were bored in the transplant and silver wire used to hold it in place, a suture now rarely used in our bone surgery. Figure 2 shows the graft three months later firmly united above and below with only slight increase in the size of the transplant. During this convalescent period the child wore a cast and was provided with crutches.

Two weeks after the roentgenogram (Fig. 2) was taken the child stepped rather heavily on the left foot while playing and felt and heard something snap. No particular pain was complained of, but a month later (June, 1913), her parents brought her to the clinic for examination. Figure 3 shows a fracture where the silver wire was thrown around the graft and the lower fragment. The nonabsorbable silver wire had caused an osteoporosis here which finally resulted in fracture at the instigation of an unusual strain. Casts and crutches were used for a year in the hope that the fractured graft would unite. In July, 1914, fibrous union only had occurred, but there was marked increase in the size and density of the transplant. Figure 4 shows the somewhat wild attempt of Nature to bring about union.

It was decided again to remove a piece of bone from the sound tibia as a graft to bridge the fracture in the original transplant, and July 23, 1914, a piece of bone 2¼ inches long by three-eighths inch wide was transplanted. The silver wire that was easily accessible was removed. A cast was worn until March, 1915, though weight-bearing was permitted in three months. Figure 5 shows the condition, April 26, 1915. Note the beginning formation of a medullary cavity in the transplanted area. The child now has complete restoration of function.

Fig. 1. — Incomplete regeneration of the shaft of the tibia following subperiosteal removal twenty-one months before.

Fig. 2. — The graft three months after operation, firmly united above and below.

Fig. 3. — A month later than Figure 2, four weeks after the fracture of the transplant.

Fig. 4. — One year after the fracture of the transplant. Note the callous formation.

Fig. 5. — Restoration eight months after the second operation. Note the beginning formation of the intramedullary canal.

The case is thought worthy of report for the following reasons:

1. It emphasizes the fact that nonregeneration frequently occurs after a subperiosteal resection, as advised by Nichols.[1]

1. Nichols, Edward H.: Acute, Subacute and Chronic Infectious Osteomyelitis: Its Pathology and Treatment, THE JOURNAL A. M. A., Feb. 13, 1904, p. 439.

2. The operation as recommended by Phemister[2] was probably not done on this child at the right time (two months after onset). A little later enough osteoblasts and new bone might have been attached to the periosteum to insure the regeneration of the entire shaft.

Empirically, no definite time can be set for removal of the shaft. The Nichols operation probably is not used as often as it should be because of this indefiniteness as to the time the shaft should be removed. It would be better to remove the entire shaft, especially in children, and quickly eradicate the disease if we could be at all sure that regeneration from the periosteum would follow. While in this case the patient has been submitted to three operations, she now has a practically normal tibia and not the hard eburnated tibia so prone to reinfection that occurs in the old chronic cases of osteomyelitis.

It may be better to accept the chance of nonregeneration in these cases of acute osteomyelitis of the tibia involving the large part of the shaft, since bone transplantation or the use of the fibula, as advised by Huntington,[3] offers such ready means of controlling the deformity and disability. But these methods cannot so readily be advised, for example, in the humerus and the femur, for here there is no second bone as the fibula to assist in maintaining alinement and growth. However, this is not an insurmountable difficulty.

3. Figure 5 shows how the transplanted bone has taken on the function of normal bone and its attempt, and failure, at union.

HAS SECRETIN A THERAPEUTIC VALUE?*

A. J. CARLSON, PH.D., J. E. LEBENSOHN, M.S., AND S. J. PEARLMAN, B.S.
CHICAGO

It is well established that acid chyme in the duodenum is the normal stimulus to the secretion of pancreatic juice.[1] Interaction of the acid with the duodenal mucosa liberates into the blood stream a substance which, circulating through the pancreas, excites the latter to activity. This exciting substance has been termed "secretin." It can be prepared artificially by macerating duodenojejunal mucosa in 0.4 per cent. hydrochloric acid, neutralizing the boiling mixture, and filtering. A few cubic centimeters of the filtrate injected into a vein produce invariably a powerful secretion of pancreatic juice.[2] That a "chemical messenger" is at the basis of the duodenal acid reflex has been proved by even more crucial experiments—transfusion (Wertheimer,[3] Enriquez and Hallion[4]), cross circulation (Fleig,[5] Matuso[6]), and perfusion of the isolated pancreas (Huston[7]).

2. Phemister, D. B.: Subperiosteal Resection in Osteomyelitis: an Experimental and Clinical Study, read in the Section on Orthopedic Surgery at the San Francisco Session of the American Medical Association, June, 1915.

3. Huntington, T. W.: Case of Bone Transference; Use of Segment of Fibula to Supply a Defect in the Tibia, Ann. Surg., 1905, xli, 249.

* From the Hull Physiological Laboratory of the University of Chicago.

* Owing to lack of space, this article is abbreviated in THE JOURNAL by omission of the bibliographic references. The complete article appears in the authors' reprints, a copy of which may be obtained by sending a stamped addressed envelope.

* This investigation was undertaken at the request of the Council on Pharmacy and Chemistry. The following report, having been submitted to the Council, received its endorsement (see report of the Council on Pharmacy and Chemistry, "So-Called Secretin Preparations," Propaganda Department, this issue).

PROPERTIES OF SECRETIN

Prosecretin.—Secretin is soluble in water, yet a watery extract of intestinal scrapings is without action,[2] even after being submitted to acid treatment.[8] Starling therefore holds that secretin exists in the intestinal mucosa in an inactive form, as "prosecretin." The content of the intestine in prosecretin decreases from the duodenum down, so that one is unable to demonstrate any prosecretin in the last 2½ feet of the ileum. Prosecretin is insoluble in water, acetone, absolute alcohol or ether. Secretin, on the other hand, is readily soluble in water, normal salt solution and diluted alcohol (70 per cent.), but likewise insoluble in absolute alcohol and ether.

Preparation.—All of the more dissociated acids liberate secretin from intestinal mucosa on boiling. Their action is dependent on the degree of dissociation,[9] carbonic and boric acids being inactive.[10] Secretin can also be prepared with strong soaps (from 10 to 30 per cent. sodium oleate), alcohol (70 per cent.,[11] 0.6 per cent. sodium chlorid[6]). The acid and soap in the duodenum produce secretion; there is no necessary correspondence between the action of a substance in the intestine and that obtained by injection after boiling mucosa with it. The sodium chlorid, bile, maltose and glucose produce some secretion by the latter method yet none by the former.[6] On the other hand, ether, chloral and oil of mustard excite secretion when in the intestine, but no secretin can be prepared from boiled mucosa by their action. The irritation of the lining cell has produced the necessary hydrolysis.[8] In well-controlled experiments, Wertheimer and LePage[12] found that after the introduction of acid, secretin is secreted into the lumen of the intestine. Matuso[6] confirmed their results, and found this a satisfactory method for the preparation of secretin. It is said that secretin can be obtained by merely boiling the mucosa with water, but the results are inconstant.[13]

Action.—Secretin is an excitant not only of the pancreatic juice but also of the liver and the intestinal mucosa. The flow of bile is markedly accelerated (Henri and Portier,[14] Enriquez and Hallion[15]), likewise that of succus entericus (Delezenne and Frouin,[16] Bottazzi and Gabrielle[17]), and intestinal peristalsis is stimulated (Enriquez and Hallion,[18] Falloise[19]). Injections of secretin produce a marked vasodilatation, but the secretory effect is independent of the blood pressure changes. The pancreas is not readily fatigued by secretin. Bayliss and Starling[2] have obtained undiminished flow after eight hours of continuous injection. Our experience confirms this result. Also, equal doses of secretin give corresponding results at various intervals. Moreover, anesthesia does not affect the flow. Secretin is unrecoverable from the glands even after two hours of continuous injections.[22] The juice obtained by secretin has been subjected to many studies.[23] It is of high alkalinity (about seventh normal), contains all the pancreatic ferments, and corresponds in all respects to the juice obtained in digestion from permanent pancreatic fistulas.[24]

Specificity.—In a maceration of the duodenojejunal mucosa, such as we have in secretin, the known substances are proteoses and peptones, acid amins, bile salts, beta-imidazolethylamin, cholin, gelatin and inorganic salts. These substances, individually and severally, together with their derivatives, are devoid of secretory action. Chemically, secretin is then a specific entity. But like epinephrin, in its distribution, it

is nonspecific. Active preparations have been made from an extraordinary variety of animals among the different classes of vertebrates (Camus,[25] Bayliss and Starling,[26] Chapman[27]). It is likewise found in the new-born and in the fetus.[28] Its action, however, like its chemical composition, is markedly specific. It stimulates the flow of pancreatic juice, bile and succus entericus. Its effect on the gastric glands is negative, and on the saliva likewise.[29] On the other hand, no other extracts produce pancreatic secretion. Dr. Koch, who, in collaboration with Dr. Keeton and Dr. Luckhardt, has done the most recent work on gastrin[30] (a substance that most nearly resembles secretin) and has isolated an extremely active preparation, finds that gastrin injection has likewise no effect on the pancreas. Camus and Gley,[31] with crude preparations, had previously obtained a similar result.

Lability.—Neutral secretin is but feebly attacked by a temperature of 100 C. If heated in an autoclave (so as to prevent oxidation), this temperature can be continued for thirty minutes without any change in its activity. Increasing the temperature increases the speed of destruction, so that at 140 C. the destructive action is marked.[32] Autoclaving at 15 pounds for fifteen minutes, as in ordinary sterilization of culture mediums, produces, we found, a distinct though not serious decrease in activity. Secretin acidified to fifth-normal with hydrochloric acid loses 60 per cent. of its activity on fifteen minutes boiling. Secretin, alkalinized to fifth-normal with sodium hydroxid loses 95 per cent. of its activity in five minutes' boiling; decreases to a trace in thirty minutes, and disappears entirely in sixty minutes. At room temperature, with fifth-normal alkalinity, 80 per cent. of secretin is destroyed in eight hours.[32] The destruction probably means a secondary cleavage of the secretin molecule itself.

Secretin is oxidized readily. If left standing uncovered for a summer's day, the preparation will be inactive.[22] Even if kept in the ice-chest (no other precaution being taken), its activity is lost in a very few days. Sunlight undoubtedly hastens the oxidative process. If care is taken as to sterility, and the secretin is kept in the ice-chest, well stoppered and in a dark flask, it will retain its activity for several weeks.

Dixon and Hamill[11] claimed that secretin disappears quantitatively on passage through a Berkefeld filter at 5 mm. pressure. Lalou,[21] using higher pressure, was unable to confirm the finding, but obtained a marked decrease in activity. Our results are in accord with those of Lalou.

Analogy to Epinephrin.—The analogy of secretin to epinephrin does not generally receive enough emphasis. Both substances are nonspecific in distribution, but specific chemically, and especially physiologically, epinephrin acting on the myoneural junctions, secretin on intestinal digestion. They are both relatively simple substances of low molecular weight, and subject to rapid oxidation whereby their properties disappear. The action in both cases is very transient. They are the two examples of what Starling calls the "acute hormones," in which it is essential that reaction take place immediately, and shall disappear as soon as the exciting cause is removed."[33]

CLINICAL USE OF SECRETIN

Diabetes Mellitus.—Moore, Edie and Abram[34] were the first to suggest a therapeutic value for secretin, having obtained favorable results with secretin administration in diabetes. They argued that the internal secretion of the pancreas *may* be stimulated by secretin, and that some cases of diabetes *may* be due to lack of this necessary excitant. Owing to the importance of the question, their announcement was followed quickly by numerous investigations by other observers. Previously, Spriggs, at the suggestion of Starling, had tried intravenous injections of secretin, free from depressor substance in a diabetic patient, and had obtained negative results. Moore, Edie and Abram gave their secretin by mouth over long periods. Of the five cases cited in their first paper, two were negative. The third was that of a man, aged 25, who received daily 30 c.c. of secretin. After a latent period of three weeks, the sugar suddenly fell, and after four months the urine was sugar-free. Six months later a relapse occurred with the development of phthisis and death. The other two patients were a boy, aged 7, and a girl, aged 9, whose urine in from three to five weeks became sugar free during the secretin treatment in spite of severe diabetes. One of these patients later relapsed.[35] Bainbridge and Beddard[36] gave secretin a thorough trial in three cases with negative results, and are disposed to attribute the results of Moore to dieting. Dakin and Ransom[37] cited one case, secretin being given for twelve weeks, with negative results; Foster,[35] nine cases, all negative; Charles,[38] three cases, all negative. Crofton,[39] however, gave secretin a trial in one case with favorable results. Moore, Edie and Abram, in a later paper,[40] report a large number of cases tried with the majority of results negative, though in some cases an improvement in the digestion, and in certain cases an increase of weight was noted.

One method of testing the basis of Moore's theory would be by examining the prosecretin content of the intestine in diabetics. Bainbridge and Beddard found, in the paper referred to,[36] that from five of the six cases of diabetics examined postmortem, little or no secretin could be prepared; but in a subsequent report of seven cases,[41] they found only one in which the secretin obtained was scanty. The failure to obtain secretin in some cases they claim is probably due to the rapid postmortem degeneration of diabetic tissue. Evans,[42] in Starling's laboratory, found that in dogs made recently diabetic by total pancreatectomy, but little secretin could be obtained. Hedon and Lisbonne,[43] and Pemberton and Sweet[44] report, on the contrary, that the duodenum of diabetic dogs is rich in prosecretin. Bainbridge and Beddard,[41] working on a diabetic cat, likewise found prosecretin to be present in normal quantity.

Digestive Disturbances.—Secretin for digestive disturbance was first used in the "acid duodenal medication of Enriquez.[45] This consisted in the giving of tartaric acid in thick keratin capsules, the acid not being liberated until the duodenum was reached, where it provoked the formation of secretin. "The secretin mechanism," he says, "is probably capable of pathologic disturbance as would result, for example, with diminished acidity of chyme, disturbance of the normal motility of the stomach or pylorus, or diminished prosecretin in the mucosa. Such a condition would produce disturbance of the pancreatic, biliary and intestinal secretions, and interfere with intestinal movements, with a clinical syndrome of intestinal dyspepsia as a result, among the chief and most constant symptoms of which would be constipation." "The

acid duodenal medication" was submitted to wide clinical use, and very favorable results in certain obstinate cases of constipation were reported. In regard to "diminished prosecretin in the mucosa," Wentworth[46] has claimed that in infantile atrophy such is the condition, but Sweet and Pemberton[47] have found that the difficulty of preparing secretin from human duodenums is such as to render Wentworth's findings inconclusive.

Beveridge[48] suggests the use of secretin in (*a*) pyloric stenosis, (*b*) pancreatic insufficiency, (*c*) hepatic stimulation and cirrhosis of the liver (*d*) to stimulate peristalsis in colonic stasis, (*e*) in gastro-enterostomy and short-circuiting of the intestines. He claims to have used it in over a hundred cases with "brilliant results," and cites four typical histories. The G. W. Carnrick Company, which manufactures "Secretogen," an alleged secretin preparation, cites a number of authorities[49] as also recommending secretin for digestive disorders. Harrower, who is or was connected with the Carnrick Company, in clinical journals[50] has ardently advocated the use of secretin for a large number of maladies.

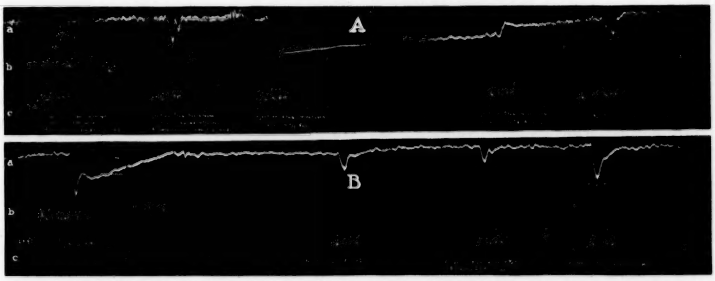


Fig. 1.—Tracings (reduced two-thirds) showing failure of Secretogen, Elixir Secretogen, and Duodenin to stimulate the flow of pancreatic juice even when administered intravenously in amounts three times greater than that recommended to be given by mouth. Dog; light ether anesthesia; cannula in the pancreatic duct; *a*, carotid blood pressure; *b*, flow of pancreatic juice in drops; *c*, signal showing where the intravenous injections were made. Tracing A: Reading from left to right, the five intravenous injections are: (1) three tablets of Secretogen digested with 15 c.c. 0.4 per cent. hydrochloric acid and neutralized; (2) three tablets of Secretogen boiled in 15 c.c. 0.4 per cent. hydrochloric acid and neutralized; (3) three tablets of Secretogen in 15 c.c. 0.9 per cent. sodium chlorid; (4) three tablets of Secretogen in 15 c.c. of 70 per cent. alcohol; (5) 15 c.c. Elixir Secretogen. Tracing B: reading from left to right, the four intravenous injections are: (1) 5 c.c. secretin made fresh from dog's duodenal mucosa; (2) three tablets of Duodenin digested in 15 c.c. 0.4 per cent. hydrochloric acid and neutralized; (3) three tablets of Duodenin boiled in 15 c.c. 0.4 per cent. hydrochloric acid and neutralized; (4) three tablets of Duodenin in 15 c.c. sodium chlorid (0.9 per cent.).

PHYSIOLOGIC CONSIDERATIONS

Throughout its clinical use, secretin has been given by mouth; *but its direct introduction into the intestine of a dog under anesthesia in even enormous quantities is without effect.* This fact, first observed by Bayliss and Starling,[2] was confirmed by Fleig,[51] and Matuso,[6] and our personal experiments have convinced us of its truth. Matuso found that ordinary secretin and that obtained from intestinal lumen gave equally negative results. Large quantities of active secretin, moreover, acidified to 0.2 per cent. hydrochloric acid, and left in the ileum for fifteen minutes, were still negative. Wertheimer and Duvillier,[52] in a previous paper on this subject, had likewise found that acid solutions of secretin (which might be considered more normal for the intestine than when neutral), when introduced into the ileum gave negative or inconstant results. They conclude that it is more likely that the pancreas does not respond to such minimal stimuli, than that the secretin is not absorbed.

The destructive action of the digestive enzymes leads us to believe that it is in inactive form that secretin is absorbed. Like epinephrin, it cannot pass through the digestive tract. Bayliss and Starling state that it is destroyed by one hour's tryptic digestion. Lalou[21] worked with the action on secretin of pepsin, dog's gastric juice, pancreatic juice, succus entericus and erepsin, and found in each case a destructive effect, even almost after mixing; and after five minutes over 75 per cent. of the activity had disappeared. Matuso[6] introduced 30 c.c. of active secretin into the intestine, removed it five minutes later, and found that no activity remained.

Other methods of administration have been tried. Subcutaneous injections are practically negative (Matuso,[6] Hallion[58]) and intrapleural injections are likewise negligible (Bayliss and Starling[26]).

Starling[33] finds that continued intravenous injections of secretin in a healthy dog produce after a time severe symptoms of collapse, which, he believes, are due to change in the intestinal mucous membrane caused by the entry and non-neutralization of the strongly alkaline pancreatic juice.

Intestinal digestion seems little affected in achylia gastrica (Stockton,[54] Ehrman and Lederer,[55] Bayliss and Starling[2]). This may be due to other secretin stimulants as fats, or to the action of the nervous mechanisms (Meltzer[56]).

THE DESTRUCTION OF SECRETIN BY HUMAN GASTRIC JUICE

We have carried out in detail experiments on the digestive effect of human gastric juice on secretin. Our results in every respect confirm the findings of Lalou,[21] who worked with commercial pepsin and dog's gastric juice, but are even more striking because of the much superior quality of pure human gastric juice.

Methods.—The human gastric juice was obtained from Mr. V., the gastric fistula case of our laboratory. The chemical and digestive characters of his juice are discussed in a recent paper.[57] In the different experiments, different samples of gastric juice were used. The secretin employed was always freshly prepared.

Digestion was carried out in the incubator at 38 C. with the reaction of 0.4 per cent. acid, and the end of the period was marked by either boiling the mixture or (in the first two experiments) by turning the mixture alkaline. The action of the preparation, we proved, was not influenced by the method used. The dogs on which the preparations were tested were prepared for carotid blood pressure, injection into the external jugular vein, and cannula in the pancreatic duct, essentially the methods of Bayliss and Starling[2] being employed. The preparations were injected at body temperature after being neutralized and filtered. Except for the addition of normal salt solution instead of gastric juice, the control injections of secretin were submitted to exactly the same treatment as the other preparations.

Results.—Our results are embodied in Table 1. We assured ourselves before beginning the series that incubation of secretin with *boiled* gastric juice produced no change. It is to be noted in the table that each experiment is a unit complete in itself, beginning and ending with a control injection of secretin. *Special attention is called to the marked destruction that follows contact of human gastric juice with secretin for merely one minute.* In Experiment 4, using 1 c.c. of human gastric juice, the action fell to 14 drops from an original secretion of 21; in Experiment 5, using 8 c.c. of gastric juice, the action fell to 6 drops from an original secretion of 20. Of interest also is the rate at which we get *complete* destruction of secretin. This is practically 2 hours for 2 c.c. with a secretin giving originally 110 drops (Experiment 2, Fig. 1), or 30 minutes for 5 c.c. with a secretin giving originally 53 drops (Experiment 6). These results are practically parallel, though they were obtained with different samples of gastric juice and in different experiments.

We also tried the effect of keeping the digestive time *constant* and varying the amount of gastric juice employed. Increasing the quantity of gastric juice used increases the quantity of secretin destroyed (Table 2).

The reader will observe in Table 1 that the results obtained from the control injection of secretin at the beginning of the experiment is uniformly greater than after several injections of digested secretin.

In view of the established fact that equal quantities of secretin can generally be relied on to produce results,[21] one might suggest that the injections of the split products of secretin has inhibited to some degree the action of the pancreas. We can submit the data in Table 3 in support of this view, showing among other things that the action of secretin is not influenced by previous injections of inert depressor substances, though it is by the injection of the cleavage products of secretion. (The various injections in the experiments were made at about fifteen-minute intervals).

We have carefully analyzed the reaction in blood pressure that follows the injection of the various preparations. We find no constant effect. Digested secretin gives a fall in blood pressure that is at times less, at times equal, and at other times greater (Fig. 1) than that produced by the original preparation.

Besides the bearing that it has on *the therapeutic use of secretin,* this destructive action of the digestive enzymes is also of prime physiologic interest. Failure to realize it has led to misconceptions as to the intrinsic nature of secretin. The findings of Lalou, confirmed by us, explain the anomaly that has led Delezenne[58] to put forward the antisecretin theory.

TABLE 1.—THE DESTRUCTION OF SECRETIN BY HUMAN GASTRIC JUICE

No. of Experiment	Quantity of Gastric Juice Used c.c.	Secretion of Pancreatic Juice in Drops						
		10 c.c. Secretin Control—Beginning Experiment	The Secretin after Incubation with Human Gastric Juice					10 c.c. Secretin Control—End of Experiment
			Dig. Time Hrs.	Secretion Rate	Dig. Time, Hrs.	Secretion Rate	Dig. Time, Hrs.	Secretion Rate	
1	2	28	6	0	4	0	2	0	16
2	2	110	2	7	1½	18	1	18	41
3	2	40	1	7	¾	7	¼	8	31
4	1	21	½	11	¼	12	1/60	14	18
5	8	20	½	1	¼	3	1/60	6	18
6	5	53	½	2	..	..	..	..	..

TABLE 2.—EXPERIMENT 7*

Preparation	Pancreatic Juice Drops
10 c.c. secretin	20
10 c.c. secretin digested with 0.5 c.c. gastric juice	15
10 c.c. secretin digested with 3 c.c. gastric juice	13
10 c.c. secretin digested with 10 c.c. gastric juice	8

* The digestive time was kept constant at fifteen minutes. (The gastric juice used had been *diluted* with stomach washings.)

TABLE 3.—EXPERIMENTS 8 AND 9

Preparations	Pancreatic Juice Drops
Experiment 8:	
10 c.c. secretin, five injections of inert depressor substances	29
10 c.c. secretin, two injections of completely digested secretin	28
10 c.c. secretin, eight injections of inert depressor substances	16
10 c.c. secretin	16
Experiment 9:	
10 c.c. secretin (control, beginning of experiment)	21
10 c.c. secretin, after thirty minutes incubation with 1 c.c. *boiled* gastric juice	27
10 c.c. secretin, after thirty minutes incubation with 1 c.c. *fresh* gastric juice	11
10 c.c. secretin (control, end of experiment)	18

SECRETIN HAS NO ACTION WHEN GIVEN BY MOUTH

It is a constant claim that so many and complex are the factors concerned in physiologic processes, that it is not unusual for clinical deductions to establish themselves in the face of *a priori* laboratory dicta. We considered it desirable, therefore, to test the action of secretin, orally administered, in the most direct manner, and the one freest from possible criticism. With this in view, we performed a series of experiments on normal unanesthetized dogs having permanent pancreatic fistulas.

Method.—In the operations for permanent pancreatic fistulas we followed closely the technic developed by Pawlow,[59] and with excellent results. The dogs maintain themselves in splendid condition if proper care is taken. This consists in feeding them only

with bread and milk, and giving sodium bicarbonate daily. The dogs were given this treatment in the evening so that experimental procedure might be carried on in the day with an empty stomach under constant conditions. Freshly prepared secretin in large quantities was given by stomach tube to these dogs, and the response of the pancreas studied and compared with the response obtained from control preparations. The same preparation was generally not given on consecutive days.

Results.—We have data from six dogs with a total of seventy-six experiments. As shown in Table 4, the administration of secretin causes an increase in the flow of pancreatic juice, *but* the administration of inert substances as extracts of colon, gastric mucosa or muscle causes a like increase. The activity of the secretin may be reduced to a low value by exposure to sunlight, or filtering through a Berkefeld filter, yet the response of the pancreas is not correspondingly reduced. The secretion that occurs in the control cases, every one will admit, is but secondary to the production of gastric juice with its accompanying hydrochloric acid, that is, excited by virtue of the extractives and water in the preparations. Such, we can prove, is the only action of secretin. A mixture of gelatin, peptone and salt water, the chief incidental constituents of a secretin preparation, gives as striking results as ever obtained from secretin administration. Yet the objection may be made that the response of the pancreas that is due to the incidental constituents of secretin is maximal, and that the secretin consequently has no opportunity to display its particular potency. But, as inspection of the accompanying tables illustrates, the administration of hydrochloric acid shows that the response is by no means maximal. Let us cite a striking experiment. For three hours before the administration of hydrochloric acid, the secretion in cubic centimeters was respectively 29.4, 11.75 and 35.4 c.c.; for the three hours after, 88.0, 49.0 and 40.5 c.c.

It is possible by large doses of sodium bicarbonate given shortly before the administration of a preparation so to depress the stomach that it does not respond with the usual production of hydrochloric acid. Under these conditions the administration of secretin is uniformly negative, but the administration of hydrochloric acid on the contrary still serves to increase the pancreatic secretion (Table 6).

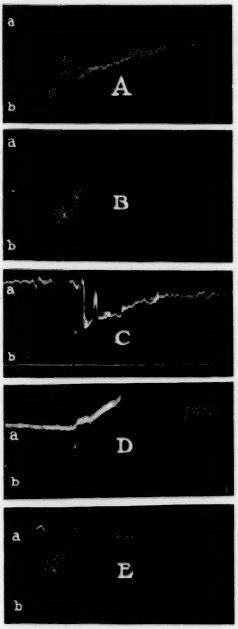


Fig. 2.—Tracings (reduced one-half) showing no stimulation of the pancreas by Secretogen, Elixir Secretogen, and Duodenin, even when administered intravenously in quantities 100 times greater than the therapeutic dose by mouth. Dog. Light ether anesthesia; cannula in the pancreatic duct; *a*, carotid blood pressure; *b*, flow of pancreatic juice in drops. Tracing **A**: at *x*, intravenous injection of 10 c.c. secretin prepared from duodenal mucosa of dog. Tracing B: at *x*, intravenous injection of 100 tablets of Secretogen digested with 0.4 hydrochloric acid and neutralized. Tracing C: at *x*, intravenous injection of 100 tablets of Secretogen, prepared as in Tracing B. Tracing D: at *x*, intravenous injection of 50 c.c. Elixir Secretogen. Tracing E: at *x*, intravenous injection of 100 tablets of Duodenin (dissolved in 0.9 per cent. sodium chlorid).

COMMERCIAL PREPARATIONS OF SECRETIN

Secretogen and Elixir Secretogen.—The Carnrick Company offers Secretogen[60] for use in a large number of conditions. The following indications for the use of the preparation purport to be based on clinical tests covering a period of several years: dyspepsia, and the indigestions generally, fermentative disorders, gastric catarrh, flatulence, nausea; pancreatic insufficiency, intestinal indigestion; gastric secretory deficiencies, apepsia; constipation and hepatic torpor; intestinal stasis; diarrhea; infantile diarrhea, "summer complaint," marasmus, inanition and malnutrition; gastric atony and dilatation; cholecystitis and gallstones, nephritis, neurasthenia, cachexia and cancer; epilepsy and high blood pressure. Testimonials are presented as to results in most of these conditions.

A quantity of "Secretogen" and "Elixir Secretogen" was bought in the open market, and the preparations were tested on suitably prepared dogs. The tablets were ground, thoroughly macerated with the solvent used (water, normal salt solution, alcohol, or 0.4 per cent. hydrochloric acid), and filtered. If hydrochloric acid was used, the pulverized tablets were boiled with it, in the manner that secretin is made from duodenal mucosa, and the preparations neutralized previous to injection. The injections were made in from 15 to 20 c.c. of the solvent. All the operations were carried on immediately before the experiment, and as rapidly as possible, so as to avoid oxidation. Elixir Secretogen was injected directly, without dilution.

TABLE 4.—DETAIL OF TYPICAL EXPERIMENTS

Dogs with pancreatic fistulas, showing that secretin given by mouth has no action on the pancreas.

Material Fed by Stomach Tube	Rate of Secretion of Pancreatic Juice in c.c. Per Hour					
	Continuous Secretion Before Feeding			Continuous Secretion After Feeding		
	First Hour	Second Hour	Third Hour	First Hour	Second Hour	Third Hour
150 c.c. active secretin, slightly acid	6.5	3.6	3.9	20.0	6.0	8.0
150 c.c. active secretin, slightly alkaline	13.0	11.0	5.0	23.0	26.0	12.0
150 c.c. secretin passed through Berkefeld	7.8	7.5	7.4	23.0	13.0	11.0
150 c.c. extract of colon	11.6	12.0	11.4	30.0	19.6	14.8
150 c.c. extract of gastric mucosa	10.0	7.0	8.0	23.0	7.5	4.0
150 c.c. extract of muscle	6.9	11.0	6.4	35.0	5.0	7.0
150 c.c. 0.4% HCl (diluted to 250 c.c.)	6.0	8.0	4.0	33.0	36.0	17.0

Results.—In only one case was a slight response obtained; the others gave none. Small and large doses were equally inert (Table 7, Figs. 2, 3). The preparations, though inert, always produced a depression in blood pressure, sometimes even greater than that caused by active secretin. Among our many tests, one bottle was found, however, to be a little different from the rest (Experiment 4). Its entire content, 100 tablets, had been ground and boiled in 0.9 per cent. sodium chlorid. The extract on injection was found to have a small but unmistakable secretin reaction, equivalent to about 2 c.c. of the control secretin used. But repeated experiments were unable to duplicate this result. The "Secretogen" and "Elixir Secretogen" were all supposedly fresh preparations, hepatic and intestinal secretion is desired. It is of specific value in proteid digestion on the theory that secretin and enterokinase stimulate the pancreas and activate its secretion."

We bought a quantity of Duodenin in the open market, and carried out on this product the same series of experiments as that used in the case of Secretogen. The results were similarly negative (Table 8).

In regard to both Secretogen and Duodenin, we assume that the manufacturers have tried to put secretin in them, but have been unable because they have failed, in all likelihood, to check their methods by physiologic standardization. These firms do not give any details as to the procedure they employed in their manufacture of secretin. Desiccated secretin of

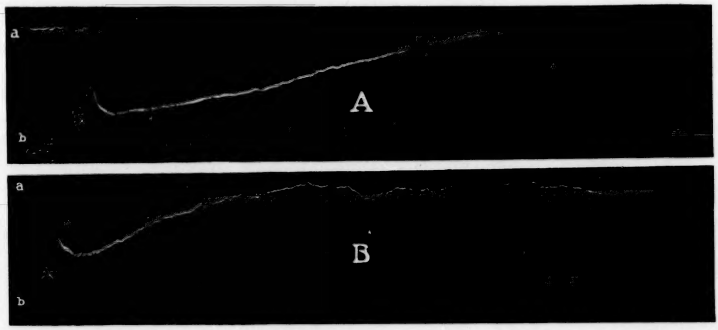


Fig. 3.—Tracings (reduced one-half) showing practically complete destruction of secretin by the gastric juice. Dog under light ether anesthesia; cannula in the pancreatic duct; *a*, carotid blood pressure; *b*, record of flow of pancreatic juice in drops. Time, twenty-five minutes. Tracing A: intravenous injection of 10 c.c. secretin (prepared fresh from dog's duodenal mucosa) at *x*. Tracing B: intravenous injection (at *x*) of 10 c.c. of the same secretin as in Tracing A, after being digested in normal human gastric juice at 37 C. for two hours.

the retail drug store informing us that a fresh supply was obtained from the wholesale house each week.

Secretogen, then, contains practically no secretin, and even if it did contain secretin, it can have no effect on the pancreas when taken by mouth. The indications for Secretogen, therefore, are based on false premises, and the testimonials are worthless.

Duodenin.—This is a preparation manufactured by Armour & Company, which purports to be "secretin plus enterokinase." The claims for this product are similar to those for Secretogen, but somewhat less sweeping. According to the manufacturers, "Duodenin (Armour) is recommended in the treatment of intestinal disorders where an increased flow of pancreatic, extreme potency has been prepared by various physiologists,[61] 1 mg. ($\frac{1}{64}$ grain) of which is active when given intravenously. It is difficult to conceive that any of these methods were used in the preparation of Secretogen or Duodenin.

CONCLUSIONS

1. Secretin is quickly destroyed by gastric juice and by trypsin.

2. Secretin is not absorbed in active form from the alimentary tract.

3. The presence of secretin or prosecretin cannot be demonstrated in the commercial preparations "Secretogen," "Elixir Secretogen" and "Duodenin" even

TABLE 5.—SUMMARY OF EXPERIMENTS
Dogs with pancreatic fistula, weight 14 kg. Secretin given by mouth

No. of Experiment	Material Fed	Rate of Secretion of Pancreatic Juice in c.c. Per Hour		Increase in c.c.
		Three Hours Before Feeding	Three Hours After Feeding	
3	Secretin slightly acid	5	11	6
5	Secretin slightly alkaline	24	30	6
4	Secretin passed through Berkefeld	18	23	5
1	Secretin exposed to sun for four hours	16	29	13
2	Extract of colon (rabbit)	19	29	10
3	Extract of gastric mucosa	14	23	9
3	Extract of muscle	8	16	8
2	Mixture of gelatin, peptone and salt	23	33	10
1	1 per cent. peptone solution	6	8	2
4	0.2 per cent. hydrochloric acid	13	37	24
3	Milk and bread	7	20	13

when the therapeutic dose of the preparations is given intravenously. In the case of "Secretogen," intravenous injection of 100 times the therapeutic dose reveals occasionally an insignificant trace of secretin.

DISCUSSION OF RESULTS

It is, of course, objectionable that preparations containing no secretin should be advertised to the medical profession as containing this substance. The more important blunder, however, consists in the attempt to in all the diseases in which it is theoretically indicated as epinephrin therapy is in Addison's disease.

But there remains the alleged favorable effect from secretin therapy by mouth in various diseases in man. It is, perhaps, impertinent for laboratory men to comment on these clinical results. The ordinary "testimonials" need not be considered, but we should like to ask the serious worker who thinks he has actually obtained good results from secretin therapy how certain he is of the causal relation between the giving of

TABLE 6.—SECRETIN IN EXPERIMENTAL "ACHYLIA GASTRICA"

Exp. No.	Material Fed	Rate of Secretion of Pancreatic Juice in c.c. Per Hour					
		Continuous Secretion Before Feeding*			Secretion After Feeding		
		First	Second	Third	First	Second	Third
1	150 c.c. secretin	8.7	7.5	6.8	3.0	1.0	4.8
2	150 c.c. secretin	4.5	6.5	10.0	6.0	7.5	7.6
3	150 c.c. secretin	15.6	8.1	16.0	3.9	4.9	2.9
1	150 c.c. 4% HCl (diluted to 250 c.c.)	9.8	7.0	6.0	65.1	28.0	7.1
2	150 c.c. 4% HCl (diluted to 250 c.c.)	17.4	13.5	17.0	34.0	18.0	20.0

* Five gm. Na HCO_3 given at beginning of each first two hours.

TABLE 7.—SUMMARY OF TYPICAL EXPERIMENTS SHOWING THE ABSENCE OF SECRETIN IN "SECRETOGEN" AND "ELIXIR SECRETOGEN" EXCEPT IN OCCASIONAL TESTS WHEN ADMINISTERED IN ENORMOUS DOSES

Dogs under ether anesthesia

Exp. No.	Quantity of Secretogen and Elixir Secretogen Used*	Secretion of Pancreatic Juice in Drops, Following Intravenous Injection						
		Control 10 c.c. Secretin	Secretogen in				Elixir	Control 10 c.c. Secretin
			Distilled Water	0.4% HCl	70% Alcohol	0.9% NaCl		
1	Secretogen, 1 tablet; Elixir, 15 c.c.	109	0	0	0	0	0	69
1	Secretogen, 6 tablets	..	..	0	..	..	..	..
2	Secretogen, 3 tablets; Elixir, 15 c.c.	16	0	0	0	0	1 (?)	16
3	Secretogen, 5 tablets	..	..	1 (?)	..	..	..	..
4	Secretogen, 25 tablets	14	..	1 (?)	..	..	..	8
5	Secretogen, 100 tablets	110	..	..	..	21	..	67
6	Secretogen, 100 tablets; Elixir, 125 c.c.	19	..	5	..	1	2 (?)	8
7	Elixir, 50 c.c.	..	..	..	..	..	1 (?)	..

* One to three tablets is (according to the label) the therapeutic dose of Secretogen; 4 to 12 c.c. the dose of Elixir Secretogen.

TABLE 8.—SUMMARY OF TYPICAL EXPERIMENTS SHOWING THE ABSENCE OF SECRETIN IN "DUODENIN"

Dogs under ether anesthesia

Exp. No.	Number Duodenin Tablets Used	Secretion of Pancreatic Juice in Drops, Following Intravenous Injection					
		Control 10 c.c. Secretin	Duodenin in				Control 10 c.c. Secretin
			Distilled Water	0.4% HCl	70% Alcohol	0.9% NaCl	
1	3	29	0	0	0	1 (?)	28
1	6	..	..	1 (?)	..	..	..
2	18	16	..	6	..	..	16
3	5	14	..	0	0	0	8
3	25	..	..	1 (?)	..	..	..
4	100	110	..	0	..	..	67
5	150	19	..	0	..	0	8

offer such preparations for oral administration, because even chemically pure secretin would be equally ineffective when taken by mouth. There is as yet no reliable evidence that lack of secretin is a primary or important factor in any disease. Even should this be established, secretin therapy, to be effective, must be intravenous. Secretin has not yet been prepared in sufficiently pure state to render possible intravenous injection in man without injurious effects. And even when this has been attained, the very fleeting action of secretin will in all probability render secretin therapy as futile

secretin or alleged secretin and the abatement of the disease.

When a therapeutic measure not only lacks a positive basis in physiology and pathology but runs contrary to all the well-established experimental facts in these fundamental medical sciences, is it too much to ask that positive clinical findings be subjected to more than usual critical analysis before acceptance? *"Clinical tests,"* it is said, "covering a period of several years have proved that neither the condition in the stomach during digestion nor those in the intestine

prevent the secretin from entering intact into the circulation." When we meet claims such as this, should we not scrutinize the "tests" as well as the men who make them?

We are indebted to Dr. J. H. Moorehead for assistance in part of the surgical work.

TRICHOKYPTOMANIA

RICHARD L. SUTTON, M.D.
KANSAS CITY, MO.

Of the various unusual disorders which occupy a position on the borderline of dermatology, none are of greater interest than those neurodermatoses characterized by habit spasm. In addition to the "tic de l'epilation" of Raymond[1] (trichomanie,[2] or trichotillomania[3]), and the "dermatothlasia" of H. Fournier,[4] there exists a third type, which may be designated as "trichorrhexomania" or better, "trichokyptomania."

Fig. 1. — Trichokyptomania, showing character and extent of hair loss on right side of head.

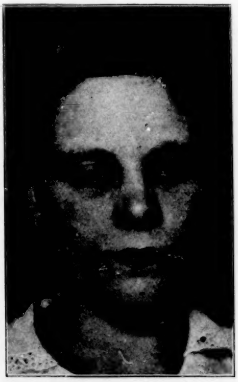


Fig. 2. — Trichokyptomania, showing character and extent of hair loss in orbital and palpebral regions.

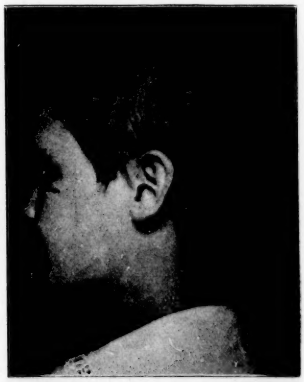


Fig. 3. — Trichokyptomania, showing character and extent of hair loss on left side of head.

It is probable that in many instances the condition is present as a complication of either trichotillomania or dermatothlasia, but occasionally, as in the following instance, it exists alone:

C. S., woman, aged 18, single, stenographer, a native resident of Kansas, referred to me by Dr. Eugene Carbaugh of Kansas City, during the past two years has been the subject of a peculiar patchy form of baldness of variable degree. The family history is negative with regard to both nervous and cutaneous diseases. The father is living and well at 44, and the mother enjoys excellent health at 42. There is one other child, a girl of 16, who has never experienced a serious illness. The patient is a robust, well-nourished girl, with brown hair and eyes. She has always been of a nervous temperament, and as a child frequently sucked her fingers and chewed her nails. She has never been troubled with adenoids or other obstructive disorders of the upper air passages. She first menstruated at the age of 14 years, and since that time her monthly illnesses have occurred regularly and painlessly. During the past two years the patient's associates have noted the presence of a peculiar, irregular, patchy type of baldness, which at first involved only the eyebrows and the lashes, but later extended also to the parietal and the postauricular regions. It was for relief from the alopecia that advice was sought.

A careful general examination revealed nothing abnormal. The patient was intelligent and mentally alert, and presented no stigmata of degeneration. The unbroken hair shafts were smooth, and apparently normal in every way, and exhibited no tendency to trichorrhexis nodosa, monilethrix or other parasitic or trophic disorder. The hair loss was fairly symmetric, and involved the eyebrows and upper lashes, and the right and left parietal and postauricular regions. In these localities the shafts were short and stiff, and the distal extremities of many were jagged or split. The tips of a considerable number were broken squarely across, however, as if the filament had been clipped off with a pair of sharp shears.

The patient at first disclaimed all responsibility for the presence of the condition; but later, when the matter was fully explained to her, and her cooperation sought, she consented to demonstrate the method employed in getting rid of the shafts. One or two, rarely more, of the filaments were firmly grasped between the tips of the thumb and forefinger, and quickly twisted into the form of a small figure 8, probably for the purpose of securing additional leverage. The shafts were then swept across the sharp, saw-like edge of the nail in such a manner that they were broken off short, at a distance of from 0.2 to 0.5 cm. from the surface of the skin. The girl asserted that epilation rarely if ever occurred, and a careful examination of the discarded shafts bore out the truthfulness of her statement. The nervous affection was most troublesome when the patient was worried or idle, and alone. During these periods she would sit and gaze into space, often for hours at a time, meanwhile breaking off and throwing away one hair shaft after another.

The patient was referred to Dr. Andrew L. Skoog's service, in the Neurological Department of the University of Kansas School of Medicine. Under a course of psychotherapy, appreciable progress toward recovery has been made in the course of a few weeks.

728 Lathrop Building.

1. Raymond: Jour. d. Pract., 1905, p. 683; Jour. de méd. int., 1902, p. 195.
2. Besnier: Monatsh. f. prakt. Dermat., 1889, ix, 572.
3. Hallopeau: Ann. de dermat. et de syph., 1889, x, 440; ibid., 1894, p. 541. Brocq, Traité elementaire de dermatologie pratique, Paris, 1907, ii, 398. Reme: Thèse de Paris, 1906. Yvernogeau: Thèse de Bordeaux, 1905. Sutton, R. L.: Trichotillomania, THE JOURNAL A. M. A., Dec. 12, 1914, p. 2126. Martin, J. C.: Trichotillomania, ibid., April 10, 1915, p. 1236.
4. Fournier, H.: Jour. mal. cutan. et syph., 1898, x, 225.

New Instruments and Suggestions

LIMITED PULMONARY EXPANSION IN APICAL INVOLVEMENT

ITS ACCURATE MENSURATION WITH THE THORACIMETER, A NEW DEVICE

M. J. FINE, M.D., NEWARK, N. J.
Chief Clinical Assistant of Newark Tuberculosis Bureau

The intensive study of tuberculosis by medical men particularly interested in this field has established statistically and otherwise that the apex of the lung is the point of predilection in early pulmonary involvement. A study of the physical signs which would make the early recognition of apical impairment possible is, therefore, of the highest importance. In 100 cases which I have closely observed, comparing the healthy with the affected side, I find that retraction, partial atrophy of the muscles and limited expansion are special diagnostic factors; my findings, I may say, also tally with those of Dr. Woods Hutchinson, namely, that the circumference is increased at the dorsoventral diameter between the ensiform cartilage and the angle of the scapula.

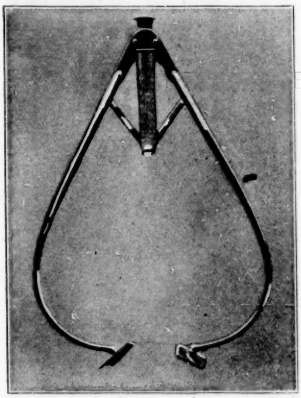


Fig. 1.—Thoracimeter, showing attachment of plates to the round edges of the pelvimeter.

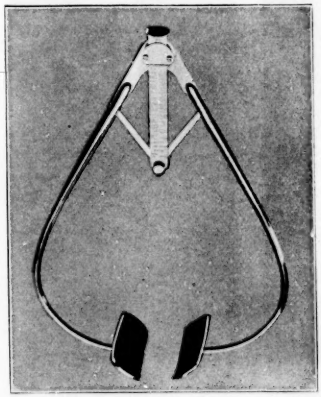


Fig. 2.—Thoracimeter, showing the metal plates in position.

Williams of Boston, in 1897, pointed to the interference in the respiratory activity of the diaphragm as an early sign of pulmonary tuberculosis. Various theories have been advanced as a reason for this impairment in function: Hofbauer suggested that the diminished expansion was due to the decreased elasticity of the affected lung; de la Camp ascribed it to the fact that the phrenic nerve was bound down by the adhesions at the apex; others look on the extensive area of retraction as the result of the absorption of pleuritic exudates, and Jessen regards the partial atrophy of muscles as the outcome of nerve changes.

Unilateral limitation of diaphragmatic movement is undoubtedly an early pathognomonic sign of apical involvement caused, most likely, by the induration of the parts; Krönig maintains that indurations at the apic ' are of tuberculous origin, while K. Blumel insists that he corps of medical men in the German army should mak a repeated examination of the apices, especially with reference to respiratory inhibition, for the early recognition of tuberculosis in the soldiers and would-be recruits.

A diminution in the expansive power of the lung, no matter what the particular explanation for it may be, is now unanimously regarded one of the early signs of apical disease. The gaging of the exact degree of expansibility and its variations from the normal is therefore of vital importance in diagnoses. Unfortunately we have been compelled up to now to estimate this variation more or less blunderingly. The eye and the tape-measure are not sufficiently reliable in the detection of slight changes in expansion, in the supraspinal and infraclavicular regions. What we require is an instrument of precision, one that is portable, simple in design, inexpensive and accurate. I believe that I have devised an instrument which will meet these requirements.

I have utilized an ordinary pelvimeter as the basis of what I call my "thoracimeter." To each bulbous end, from which a section has been removed, I have attached, by means of a short cross-piece and rivet, a pliable oblong metal plate, 1 inch wide by 2½ inches long, with rounded corners. When the instrument is held perpendicularly, by virtue of a hinge joint, these plates enjoy a wide amplitude of up and down motion. The readings are clearly visible on the upright bar and are given in inches and centimeters.

It can be readily appreciated that these metal rests, because of their flexibility and wide range of movement, can be firmly applied against the varying outlines of even the most angular chest. Accurate mensuration of the expansive ability of any part of the lung is, therefore, easily obtained.

The modus operandi for testing the apices which I have found perfectly satisfactory is as follows: One plate is placed firmly against the anterior part of the chest, just below the clavicle, midway between the sternum and the head of the humerus; the other plate is placed firmly on the posterior aspect just above the spinous process at the side corresponding with that of the anterior plate. We take note of the measurement in quiescent respiration. Then the patient is instructed to expand his chest to its fullest capacity, and the difference in the two measurements is computed. The same process is gone through with on the other side. By comparing the two figures we can easily perceive which side is lacking in expansion and to what extent.

It is well, however, to bear in mind that normally there is a slight increase in the anteroposterior diameter of the right side; in left-handed persons the increase is in the left side. This difference is no doubt due to better muscular development on the side which is subject to more use, but the expansion is the same on the two sides. The instrument which I have perfected, in order to obviate some difficulties in my own practice, has afforded me much satisfaction. I hope it will prove of as much benefit to other members of the profession as it has to myself.

I hope in the near future to obtain sufficient data to establish the normal comparative expansion and retraction according to age and weight.

145 South Orange Avenue.

Heredity in Neuropaths.—Insanity, or a neuropathic hereditary tendency in a parent, tends to reappear in his children, not always in insanity, but in one of the forms of nervous instability. . . . It must, however, be kept in mind that, where insanity or any such nervous disorder is due to an accident which has injured the brain, or to malnutrition of the brain during development, it is not transmissible.—F. M. Sandwith, *Clinical Journal.*

V. 191

A PRACTICAL DEVICE FOR USING THE SAFETY RAZOR BLADE TO CUT CELLOIDIN SECTIONS*

O. T. MANLEY, M.D., AND DAVID MARINE, M.D., CLEVELAND

One of the drawbacks to the more extensive use of routine celloidin or frozen sections has been the problem of keeping microtome blades in good condition. Almost any assistant with a week's practice can block, cut and stain sections as a routine; but it is difficult to teach laboratory assistants to sharpen and care for microtome blades, and with the more

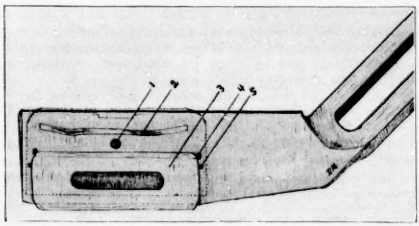


Fig. 1.—Instrument with blade holder removed. 1, Position of set screw holding the spring steel plate; 2, small steel spring to lift plate when set screw is loosened; 3, safety razor blade; 4, one of the posterior and internal pair of posts controlling position of razor blade; 5, one of the anterior and external pair of posts controlling position of razor blade.

extensive employment of women for such work the problem has become acute. Also, the cost of having the blades sharpened outside may be prohibitive or the work unsatisfactory, and if done by a trained assistant it is time-consuming.

To meet these conditions, several men have attempted to utilize the safety razor blade as a microtome. One of the chief troubles has been the vibration, especially with the paraffin technic, and so far as we know no satisfactory method has been devised to get around this difficulty.

For the preparation of celloidin or frozen sections from large numbers of animal experiments, we have found the following simple device highly satisfactory: As a holder we use an old Walbe blade after straightening the edge, and having it reground if badly worn. The edge is dulled except for the portion covered by the razor blade. We have tried the several types of razor blades, and on account of the length (5.7 cm.)

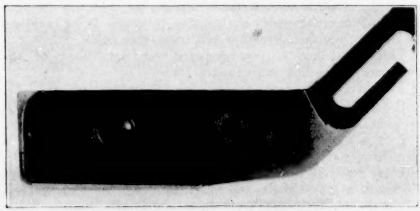


Fig. 2.—Instrument ready for use.

and double edge have found the Durham Duplex the most satisfactory. A longer blade would have advantages, but it is not necessary. The blade (3, Fig. 1) is laid on the holder so that the edge of the holder extends to the beginning of the bevel on the razor blade, allowing a free border of about 2 mm. This position is maintained by two pairs of pins set into the holder and so placed that the posterior pair (4, Fig. 1) engages the curved corners of the razor blade to prevent its slipping back, and yet does not touch the cutting edge. This pair of pins also penetrates the spring steel plate which grips the blade. The second pair of pins (5, Fig. 1) is placed slightly external to and 0.5 cm. in front of the first pair. These act as guides for the razor, facilitating its insertion and preventing any lateral motion that might allow the cutting edge to hit the posterior pair of pins. A plate (represented by a broken outline, Fig. 1) of spring steel, tapering to a thin edge anteriorly and slightly convex to permit the ends to engage first, grips the razor blade throughout its entire length about 0.5 cm. back of its cutting edge.

This plate is tightened by a set screw (1, Fig. 1) as shown in Figure 2. A small spring (2, Fig. 1) placed posterior to the set screw, between the holder and the plate, facilitates changing or adjusting the razor blade.

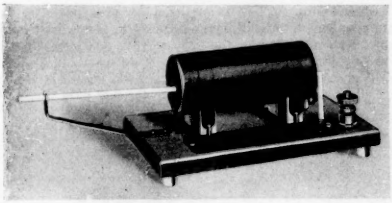
This modified microtome has been in use for some months. Any one can obtain sections from 15 to 20 microns thick at a very low cost, and for the routine section work with our animal experiments it has replaced the standard microtome blades.

* From the Laboratory of Experimental Medicine, Western Reserve University.

AN ELECTRICAL FURNACE FOR STERILIZING INOCULATING LOOPS*

H. J. CORPER, M.D., CHICAGO

In inoculating culture tubes or making sputum smears, the spattering occasioned by flaming the platinum loop in the Bunsen burner has long been a bugbear. This danger has been overcome by first plunging the loop into strong phenol (carbolic acid) solution, shaking off the excess material and



Electric furnace for sterilizing inoculating loops.

then flaming. The main objection to this method, however, has been the fact that it is time-consuming, adding another movement to the flaming procedure, and that vaporized phenol is not pleasant to inhale. With the advent of electricity, these undesirable features can be overcome by the use of a small electric furnace.

This furnace is simple of construction, being composed of a small lavite tube 3 inches long, three-eighths inch inside diameter and one-half inch outside diameter, with thirty-two threads to the inch on the external longitudinal surface, which is wound with No. 30 nichrome wire for its full length. Externally there is a brass tube 1¼ inches in diameter, at each end of which two slate plugs are placed with three-eighth-inch holes the same size as that in the lavite tube. The space between the lavite tube and the brass tube is filled with a mixture of 85 per cent. magnesium oxid and 15 per cent. pure asbestos wool. One end of the lavite tube is plugged with a mixture of potassium silicate, kaolin and the magnesium oxid and asbestos wool combination. The furnace rests on a slate platform with four lavite legs, and can be connected with either direct or alternating current by means of two special nondetachable binding posts. Thus prepared, a bright red heat is obtained in the inside of the lavite tube. At present a V-shaped metal shoot (not shown in the illustration) is used, which leads directly into the furnace opening, so that the loop may be literally thrown into the furnace. The flaming with this furnace requires only a few moments and is complete, removing all carbonized material.

* From the Laboratories of the Municipal Tuberculosis Sanitarium.

AN AUTOMATIC SPINNING DEVICE FOR THE HARVARD KYMOGRAPH

G. BACHMANN, M.D., ATLANTA, GA.
Professor of Physiology, Emory University (Atlanta Medical College)

The object of the device is to provide a cheap, simple and accurate means of automatically spinning a kymograph drum for one revolution. The essential parts of the device consist of a "trigger" to release and arrest the drum and an ordinary rubber band, 6 mm. wide. The trigger (Fig. 1) consists of a brass rod, 1 cm. in diameter and 18 cm. long, near the center of which is soldered a strip of spring brass 1.5 mm. thick and 10 mm. wide, shaped as shown in the diagram. A copper rivet 12 mm. long is passed through a hole in the spring at

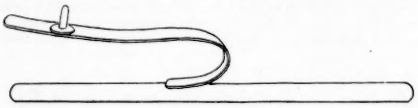


Fig. 1.—Trigger.

a distance of 30 mm. from its free extremity. In order to insure strength and rigidity, the burr is driven in and solder made to flow to all points of contact. Three slight modifications are made in the Harvard drum, namely, the spring clip which serves to hold the drum to the axle is replaced by a sleeve and thumb screw (seen above the drum in Figure 2); a steel pin 5 mm. in diameter and 20 mm. long is screwed into the bottom of the drum near the periphery; finally, a bent wire is soldered to the top of the base of the kymograph overhanging the edge, or this bent wire may be held in a binding post as shown in Figure 2.

The trigger is firmly mounted on a stand in such a position that the pin at the base of the drum will pass along the

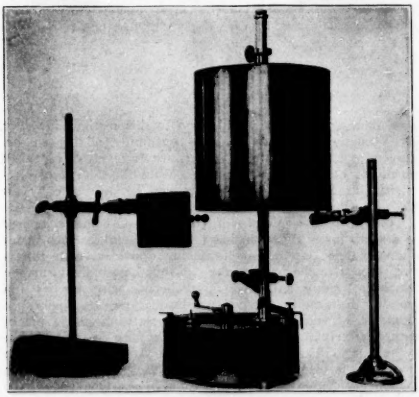


Fig. 2.—Kymograph with automatic spinning device.

curve of the spring with slight friction and be stopped by the projecting rivet. One end of the rubber band having been placed in the jaw of a double clamp fixed to the drum axle and the other end passed under the bent wire, the drum is rotated by hand from left to right until the pin has passed the rivet. This rotation twists the rubber band as seen in Figure 2. The drum can then be allowed to spin for one rotation by simply pressing on the trigger with the thumb and then releasing it. Automatic stimulation by a break induction shock can be obtained by placing the hard rubber handle of Porter's simple key in the path of the pin projecting from the bottom of the drum, the simple key being, of course, in circuit with the primary of the inductorium. The key is held by means of a buret clamp.

As it is absolutely necessary that the apparatus shall be perfectly stationary, the kymograph and the stand holding the trigger must be fastened either to the table or, when this is objectionable, to a board of appropriate size. The simplest way of making the kymograph stationary is to bore three holes adapted in position and size to the feet of the base. Holes of the proper size can be made with an auger-bit seven-sixteenths inch in diameter. When the feet are placed firmly in these holes, rotation or tilting cannot take place. The stand holding the trigger is made of what is known in the electric fixture trade as a crow's foot and a piece of one-eighth inch pipe (internal diameter). The crow's foot is fastened to the table or board by means of stove bolts.

This device can be used for recording superimposed curves. The recording points must, of course, be removed from the smoked surface after each curve is recorded before rotating the drum "backward" for the purpose of twisting the rubber band as explained above. In order to insure a return of the writing points to their starting position on the smoked surface, a perpendicular line should be drawn on the latter with a kymograph T-rule after the apparatus has been adjusted as shown in Figure 2. The writing points should be made to fall on this perpendicular line. The recording levers having been mounted on an adjustable stand, it is then an easy matter to move the levers to and from the smoked surface with accuracy as to position and degree of pressure.

Excellent spinning devices for the Harvard kymograph have been described by Jackson (A Drum-Spinning Attachment for an Ordinary Kymographion, THE JOURNAL, June 10, 1911, p. 1705) and by Guthrie (Contributions to Practical Physiology and Pharmacology, published by the author, pp. 51-65); but the one here presented, it is believed, is simpler in design and has given very satisfactory results in the hands of our students.

A DIRECT ROUTE FOR DRAINAGE OF THE PANCREATIC AREA

WALTER D. WISE, M.D., BALTIMORE

A case of acute pancreatitis was diagnosed as appendicitis and a McBurney incision made. The appendix not being at fault, a high right rectus incision determined the diagnosis. Drainage was provided through the foramen of Winslow and also through the McBurney incision. The lower incision was chiefly depended on for the drainage, as it could be seen that this line was very direct, the pancreas being exposed by lifting the great omentum and transverse colon.

This procedure is recommended for conditions of the pancreas demanding drainage.

The advantages are:

1. Its simplicity (as compared with the costovertebral incision).

2. It is more direct than the tract through the foramen of Winslow, and is more in the line of gravitation.

3. By drainage through the foramen of Winslow or through the costovertebral angle, the lower abdomen, if contaminated, might not be drained.

4. It is anatomically the correct line, as fluids from the pancreatic region (if in the peritoneal cavity) are directed to the right iliac region by the oblique shelf-like attachment of the mesentery.

1800 North Charles Street.

Water Pipes of Ship Polluted.—Surgeon J. Oliver Cobb has announced that hardly a single steamer in interstate commerce on the Great Lakes has an unpolluted water supply. The intake system is polluted while the ships are in port and even after hours of steady pumping, pure water taken in mid lake is contaminated by the bacteria in the polluted tubes and water tanks.

V. 191

Therapeutics

THE CAUSE AND TREATMENT OF THE PRESENT EPIDEMIC OF "GRIP"

ETIOLOGY

The epidemic of influenza or grip of 1890 and succeeding years, which was characterized by pains and aches in the bones, inflammation of mucous membranes, fever, prostration often out of all proportion to local physical signs, and frequent complications involving gastro-intestinal and nervous systems, made a profound impression on both the profession and the public. The word "grip" has become a popular term, readily accepted as a diagnosis of more or less severe infection not explained on any other more exact etiologic basis.

Pfeiffer isolated and described a small gram-negative bacillus, *Bacillus influenzae*, to which he ascribed the etiologic rôle in the causation of the disease. Since then, this bacillus has been found in numbers of cases, but extensive bacteriologic studies by many workers indicate that while the influenza bacillus may occur in large numbers in the mucous membranes of the sufferer of grip, there are often other organisms associated with it which probably have a causative relation to the infection. Six years ago, when cases clinically like grip were prevalent, studies of the bacterial flora in the discharges from nose and bronchi showed at the onset almost pure cultures of streptococci; later in the disease after the acute symptoms had subsided, organisms culturally like *B. influenzae* appeared in enormous numbers. Cultural studies of *B. influenzae* show that it often grows much better when mixed in culture with other organisms.

This apparent symbiosis may explain in part its pathogenic power when associated with other organisms, or, on the other hand, may be used as an argument that the real cause of the illness is another organism, such as the streptococcus, and that the influenza bacillus appears only later, growing readily on a soil prepared for it by the original infecting germ.

Mathers,[1] in an instructive preliminary report on the bacteriology of the present epidemic in Chicago, found the predominating organism, in seventeen of twenty-four cases, a hemolytic streptococcus associated with other green producing streptococci and pneumococci. In none of these cases was *B. influenzae* found. Similar results showing the prevalence of hemolytic streptococci have been obtained by other observers. While it is probable that the influenza bacillus may be found in some cases, the foregoing findings indicate that a considerable proportion of sufferers in the present epidemic may charge their woes to other organisms than the influenza bacillus, and that the streptococcus is probably largely concerned in the disease. The prominent clinical facts are the wide distribution of the infection, affecting persons in all stations of life, the evident highly contagious nature of the infection, and the great discomfort of the sufferers, due in part to the local disturbances from invasion of the several portions of the respiratory tract, and in part to the general malaise and prostration which accompany the local disease.

1. Mathers, George: The Etiology of the Current Epidemic of Respiratory Infections in Chicago, THE JOURNAL A. M. A., Jan. 1, 1916, p. 30.

SYMPTOMATOLOGY

Early in the epidemic many patients complained only of local irritation, either in the nose with later mucopurulent and sometimes blood-tinged discharge, or in the throat with dry red pharyngeal mucosa on which lymph follicles were prominent, or in the trachea and upper bronchi, with resulting laryngitis, and dry, harassing, unproductive cough. Some of these patients suffered later from more severe second attacks, in which malaise, aching of bones and general constitutional disturbances were prominent.

In those who escaped early in the epidemic, and have later suffered from the infection, the symptoms have been of varying severity, with apparently a larger proportion in which the more severe general symptoms including prostration and fever have been present. Up to date the virulence of the infection has seemed to increase rather than diminish. It is probable that the proportion of severe cases will soon begin to decrease if this epidemic follows the course of previously studied epidemics.

Complications have been numerous, as so often happens in streptococcal infections. Suppuration of the various sinuses have been frequent, and tracheitis, bronchitis, going on to bronchopneumonia, quinsy, and occasionally deep phlegmons of the neck have occurred. At the height of infection, streptococci have been isolated from the blood in the severer cases, and arthritis has been noted in a few instances. Otitis media has also occurred frequently, especially in younger patients and those who had been previously sufferers from this condition.

The man whose back is aching and chest sore with coughing is not to be considered consoled with an academic discussion of the various germs probably concealed in his larynx. He knows something is wrong, whether *B. influenzae* or *Streptococcus hemolyticus* is responsible, and he wants relief.

PROPHYLAXIS

In such a widespread epidemic, it might seem almost useless to attempt prophylaxis, particularly among those who are forced by their occupations to mingle with others on crowded cars, and in places of business. One of the chief reasons for the spread of the disease lies in the fact that many of the infected persons are not severely ill, and so are able to go to and from their work, sneezing and coughing and thus transmitting the disease to others. Much, however, can be accomplished by voluntary effort of those who cough and sneeze and expectorate, to protect those about them. Those not infected should be instructed to avoid so far as practicable exposure in crowds, or in badly ventilated, overfilled rooms and meeting places. Those who have recovered from a first mild attack may also profit by this advice, for experience shows that they are by no means immune, and that the subject of one attack not infrequently suffers from a second more severe infection.

TREATMENT

The prevention and treatment of influenza was discussed in this department of THE JOURNAL, Jan. 23, 1915, p. 341.

It is often difficult to convince the patient with a beginning tracheitis or coryza that he should exercise special care in avoiding further exposure. A day or two at home, with rest and the usual simple remedies

applied to a cold, will often be all that is necessary for a rapid convalescence. A few days' care may prevent a long illness. Those more severely afflicted with fever, chill, aching bones and cough are more easily persuaded to remain indoors. When there is marked prostration or fever, rest in bed should be enforced. Even though the infection is not severe enough to cause alarm, it leaves the body weakened and an easier prey to pneumonia, which has been prevalent during recent months.

Anything which makes the patient warm improves his condition. He may be given hot malted milk, hot tea or hot lemonade, at more or less frequent intervals. The patient may be given a hot tub bath and then put into a warm bed in a warm room as an efficient means of making him comfortable. Hot water bags at the feet and extra coverings to the bed are often needed.

The drug treatment of the attack is, of course, largely symptomatic. Preparations of salicylic acid are perhaps the most widely used by many, and are believed to exert a favorable action on the course of the disease. Acetyl salicylic acid (aspirin) in doses of from 5 to 10 grains every four hours gives relief from the general malaise and initial headache. Other drugs such as acetanilid, antipyrin and acetphenetidinum are sometimes of benefit, provided that the patient is not subjected to exposure. None of these drugs should be long continued; the most depressing is acetanilid, and perhaps the least depressant is acetphenetidinum. Should depression occur, circulatory stimulants such as camphor or caffein should be given. A hypodermic injection of strychnin, one-thirtieth grain, may be given to stimulate the nerve centers. In persons unduly susceptible to salicylates, special care must be used in regulating the dosage. In a small number of cases in which the nasal mucosa is chiefly affected, with much coryza, small doses of the extract of belladonna (from $\frac{1}{20}$ to $\frac{1}{10}$ grain) may be cautiously used with good effect. A combination of aspirin, camphor and Dover's powder will sometimes be found of value:

	gm. or c.c.	
℞ Ac. acetyl. salicylic.....	6	ʒ iss
Pulv. camphorae.....	7	gr. x
Pulv. ipecac. et opii (Dover)..	4	ʒ i

M. et fac. capsulas xx.
Sig.: One capsule every three hours.

The following prescription is suggested:

	gm. or c.c.	
℞ Acetphenetidini	1|50	
Phenylis salicylatis.....āā	1|50	gr. xxv

M. et fac chartulas 5.
Sig.: One powder every three hours.

Where there is much irritation of the throat, gargles of salt solution and mild alkaline solutions are advised. Thus a mixture of hydrogen peroxid, alcohol and glycerin may be prescribed in the following combination:

	gm. or c.c.	
℞ Aquae hydrogenii dioxidi....		
Alcoholis		
Glycerini		
Aquae cinnamomi.....āā	50	ʒ ii

M. Sig.: Use as a gargle diluted with four or more parts of water.

When there is pain or headache suggesting involvement of the nasal sinuses, sprays containing epinephrin will often give relief by allowing the escape of retained secretions. Free evacuation of the bowels should be secured by the use of a mild saline cathartic.

The general treatment must be supportive, conserving as far as possible the strength of the patient. Indications for diet will depend on the severity of the illness. For cases of ordinary severity, not confined to bed, a light nutritious diet should be ordered as soon as appetite for food begins to return. Moderation of eating and avoidance of greasy and otherwise undigestible food, so important even in health, is especially important at this time.

As soon as the patient begins to convalesce, he should be given tonics.

COMPLICATIONS

From the standpoint of complications, this epidemic bears the earmarks of a streptococcus infection. All patients should be carefully watched for complications, so that these may be met at the earliest moment. As already noted, extensions of the infection to the accessory sinuses have been frequent, and the physician should be on the alert to interpret properly new symptoms such as an increase in headache, particularly when it is localized at some definite point. Cellulitis of the tissues of the neck by extension from the throat, often without frank suppuration, has been noted. Middle ear infections must also be kept in mind. Whenever the course of the disease is prolonged or recurrence of symptoms of infection are noted, a painstaking search will often be rewarded by the discovery of some unsuspected complication which may be relieved by appropriate treatment.

THE MORPHIN HABIT

In our discussion of this subject,[1] not enough emphasis was laid on the necessity of making a careful general examination of the morphin habitué before he is subjected to the withdrawal of the drug or to the severe treatment that is necessary to promote that object. Cancer with pain, and any intense pain that will be present after the desire for morphin has been removed, precludes the necessity for treatment to remove the habit. It was not sufficiently emphasized that old age, with its degenerations, and myocardial degeneration at any age must preclude all strenuous treatment in attempting to cure the morphin habit.

A correspondent has called our attention to the fact that degeneration of the kidneys, as Bright's disease, is a serious complication in attempting to treat the morphin habit. Certainly, any acute inflammation of the kidneys would contraindicate the treatment of the habit. Also, it should be recognized that if the elimination of the kidneys is interfered with by disease, all eliminative methods used in the morphin cure will not act as satisfactorily as when the kidneys are healthy. On the other hand, most of the elimination in these "cures" is through the intestine; also the toxins, which imperfect metabolism due to the morphin produces, must more or less aggravate chronic nephritis. Hence it would seem that without chronic pain, the patient who has the morphin habit and chronic nephritis would be much better off when the morphin habit was removed. The rapidity and intensity of the treatment should not be so great in these cases, and the synthetic hypnotics and narcotics should be used with more care or replaced by some other drugs, when the elimination of the kidneys is imperfect.

1. The Morphin Habit, Therapeutics, THE JOURNAL A. M. A., Nov. 20, 1915, p. 1815; Nov. 27, 1915, p. 1912.

V. 191

Dr. H. E. Goetz of Knoxville, Tenn., the correspondent referred to, writes:

To the Editor:—Not every patient who comes to our hands with the simplest diseases can be permanently relieved. Morphinism is by no means a simple disease; I regard it as one of the most complex diseases, and therefore we must select cases properly if we hope to cure. The worst barrier, I find, is disease of the kidney, and especially Bright's disease. Next in importance is heart disease, and third, diseases of the respiratory tract. Chronic painful diseases, such as cancer, would completely preclude treatment. Old age, in itself, is not a barrier, but old age plus some organic disease would be a barrier.

After we are assured that our prospective patient has none of the diseases mentioned, the treatment is begun by the administration of three compound cathartic pills, U. S. P., containing each 1 grain of calomel, with 10 grains of blue mass, and 1/15 grain of strychnin sulphate. Six hours later this dose is repeated, minus the strychnin, and six hours following two ounces of castor oil. The usual amount of narcotic is administered in the mode most acceptable to the patient during this period. A few minutes following the administration of the castor oil, 3 grains of luminal are administered, and twelve hours later, the compound cathartic pills, without the strychnin, are repeated. Three compound cathartic pills, with the strychnin, are repeated at the end of the forty-eighth hour from the beginning of the treatment. Beginning with the dose of castor oil, or at the eighteenth hour of the treatment, luminal is given in 3-grain doses every six hours until the patient is quiet and will sleep if allowed to. No set time can be named for the withdrawal of the narcotic. It should be withdrawn, however, as soon as the patient is sufficiently under the influence of the luminal, which may be stated as the time when the patient fails to ask for it, which is generally about the sixtieth hour of the treatment. After the forty-eighth-hour-dose of the compound cathartic pills is given, magnesium sulphate is administered each morning, before breakfast time, in 2-ounce doses, until the end of the treatment, or the twenty-eighth day. Spartein sulphate in 1-grain doses every six hours I believe is a renal stimulant, and we have followed this method with good results.

These patients frequently become so thoroughly narcotized that their condition closely resembles that of chloroform anesthesia—the surgical stage—and in most cases after the luminal has been given for five or six consecutive days, they will sleep four or more days before the luminal is eliminated to the extent of their voluntarily awakening. During this sleeping stage, one should watch the elimination, the circulation and the respiration. The respiration is usually quickened to 20, and the heart beat is from about 70 to 90. Slight rises of temperature are frequently seen. The catheter should be freely used in case the patient does not void as often as every six hours.

The patient should be fed with a stomach tube, liquid of large bulk being used. We have found that hot coffee 1 pint, milk 1 quart, sugar 2 ounces, every six hours, answers admirably. When the tube is passed for feeding, it is our practice to wash out the stomach before the food is administered, as there are frequently present large quantities of bile which should be removed.

On about the fourteenth to the sixteenth day, we usually put the patient on Blaud's mass with arsenic, three times a day.

Electric light baths, to assist in elimination, are given three times a week, or oftener according to the patient's condition. I cannot place too much stress on elimination. Morphin is found in the urine of addicts as late as nine days after the last dose has been taken, and in the liver, brain and kidneys as late as fourteen days. During the reconstruction period, good food, exercise, shower baths, massage and some form of amusement assist in bringing the patient to a prime condition both mentally and physically, both of which are necessary for an ideal result.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

DIPHTHERIA IMMUNITY TEST (SCHICK TEST).—This test is intended to determine those persons who have not in their blood an amount of diphtheria antitoxin sufficient to render them immune to diphtheria. The test depends on the phenomenon that when a small amount of diphtheria toxin is injected intradermally into a person who has no free antitoxin in his blood, a circumscribed area of redness and infiltration from 1 to 2 cm. in diameter develops at the site of injection. Should the patient have free antitoxin in his blood, no reaction occurs. The reaction occurs in twenty-four to forty-eight hours, and is at its height in forty-eight to seventy-two hours. It remains for six to twelve days, and is followed by slight scaling, and leaves a brownish, pigmented spot. In some persons, a pseudoreaction may occur, which may be differentiated by its earlier appearance and disappearance, and the facts that it is less circumscribed and is not followed by pigmentation.

The test is of special value for use in institutions and among groups of persons exposed to diphtheria, in order that it may be determined which individuals should be given an immunizing dose of diphtheria antitoxin. It is also of value in the diagnosis of other conditions simulating diphtheric infections.

Diphtheria toxin in dilute solutions, such as are necessary for the test, soon loses in potency.

H. K. Mulford Co., Philadelphia.

Diphtheria Toxin Standardized (Schick Test).—Marketed in sealed capillary tubes each containing a solution of one-fiftieth of a minimal lethal dose for guinea pigs of diphtheria toxin, put up with a sterilized needle for intradermal injection.

TYPHOID VACCINE (see N. N. R., 1915, p. 324).—Swan-Myers Co., Indianapolis, Ind.

Swan's Typhoid Bacterin (No. 44) (Prophylactic).—Marketed in packages (hospital) of thirty-six vials, of which twelve contain each 500 million killed typhoid bacilli and twenty-four contain each 1,000 million killed typhoid bacilli; in packages (board of health) of seventy-two vials, of which twenty-four contain each 500 million killed typhoid bacilli and forty-eight contain each 1,000 million killed typhoid bacilli.

RADIO-REM, OUTFIT No. 5.—An apparatus designed for the production of radioactive drinking water by the action of radium sulphate. It imparts about 3.6 microcurie (10,000 Mache units) to 500 Cc. water daily. (The exact efficiency is stated and guaranteed at the time of sale.)

Actions, Uses and Dosage.—See general article on radium, New and Nonofficial Remedies, 1915, p. 262.

Radium Therapy Corporation, New York (Schieffelin and Co., New York). U. S. patents Nos. 1,032,951 and 1,032,779 (July 16, 1912; expire 1929). U. S. trademark No. 99,507.

Radio-Rem Outfit No. 5 consists of two wide-mouthed glass-stoppered bottles of about 250 Cc. capacity, each containing a fired, porous clay (terra cotta) plate, stated to contain radium sulphate. While each plate is designed to impart about 1.8 microcurie (5,000 Mache units) to the water which fills the bottle in twenty-four hours, the efficiency of each tablet is stated at the time of sale, and the manufacturers agree to replace the tablets and to pay for the test, if examination by the U. S. Bureau of Standards shows them to be deficient.

A test made for the Council demonstrated that during the impregnation of the water with radium emanation, no radium is dissolved in the water, the radioactivity being due to the presence of the emanation.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading matter

SATURDAY, JANUARY 15, 1916

THE MECHANISM FOR INCREASING THE NUMBER OF RED BLOOD CELLS

The number of red corpuscles circulating in a unit volume of blood adjusts itself to a variety of bodily and environmental factors. As an illustration of the latter, the effect of a transition to a region of lowered atmospheric pressure may be cited. When one goes to high altitudes, there is an increased blood count which may be immediate, and due to a concentration of the blood through diminution of its plasma or to a sudden discharge of sidetracked corpuscles into the blood stream; or there may be a slower and more gradual increment attributable to the activity of the hemopoietic organs and resulting in a more permanent and real increase in the total number of blood corpuscles of the body. An instance of the influence of bodily factors on the blood count is exhibited in the alleged effects of massage and athletic exercise on the circulation.[1]

There has been much speculation and not a little experimentation and observation directed to the discovery of the mechanism by which these changes and particularly the rapid adjustments, in the blood count, are brought about. Lamson[2] has summarized the possibilities as follows: If we consider the circulation to be a closed system, the number of red cells per unit volume of blood may be increased by (1) a decrease in plasma volume; (2) an actual increase in the number of red cells by new production of them or by division of old ones; (3) if the red cells are unequally distributed throughout the circulation, being packed away in certain regions in greater concentration than in the circulating blood, a stirring up of these, causing a more uniform distribution, will relatively increase the blood count; (4) a combination of any of these factors.

Lamson has carefully investigated the possible contribution of the various hypothetic factors enumerated. His studies at the Johns Hopkins Medical School emphasize anew the fact that the number of red cells per unit volume of blood is not so constant, under physiologic conditions, as is generally supposed. Under such circumstances as changes in atmospheric pressure, exercise, and emotional states such as fright or anger, oscillations in the number of cells are continually taking place. The object of this, Lamson believes, is to be found in the attempt of the body to maintain the oxygen content of the blood constant. He concludes that there is a mechanism for the regulation of the red corpuscle content of the blood, under nervous control, and reacting to the lack of oxygen as a stimulus. The suprarenal glands are believed by Lamson to play a dominant part in this mechanism, and the liver is the organ which supplies the body with red cells to meet its acute demands.

It will be interesting to examine some of the evidence relating to this postulated regulatory mechanism. Lamson has contrived various experimental devices which will produce a prompt increase in the blood count. Some are entirely foreign to the body, and others include injections of chemical substances physiologically found. Epinephrin, for example, produces a decided polycythemia. This is due entirely to the contribution of the liver. If the arterial circulation of this organ is temporarily occluded, the effect of epinephrin in bringing about the usual increase in the blood count fails; but as soon as the obstruction to the arterial blood supply of the liver is removed, the customary polycythemia ensues. Inasmuch as the polycythemia produced by injection of epinephrin can be attained even after removal of the spleen, the entire intestine and its mesentery, the omentum and the pancreas, and it can be shown by other evidence that the bone marrow, muscles, lungs, kidneys and skin play no part in epinephrin polycythemia, the assumed rôle of the liver becomes the more probable. In part the increase in blood count thus produced is due to red cells not previously present in the general circulation, for they are observed to be different in size and make-up from those present before its production. Signs of new red cell formation, such as the presence of nucleated red cells, are absent. Perhaps the phenomenon involves a splitting of red cells. The liver also appears to have some ability to decrease the plasma volume after epinephrin injection.

In Lamson's opinion respecting the mechanism by which the red count may be regulated, epinephrin is likely to be one of the most effective stimuli capable of increasing the red count. All of the prominent physiologic and pathologic conditions which might call for an increase in the oxygen content of the blood can stimulate the suprarenal glands and cause an increased output of epinephrin. Thus massage of the abdomen, a procedure known to increase the number of red cells, is believed to act by reflex stimulation of the suprarenals, rather than by an actual mechanical driving of corpuscles from the reservoirs in the abdomen. Fright

1. Exercise and the Blood, editorial, THE JOURNAL A. M. A., May 1, 1915, p. 1501.

2. Lamson, P. D.: The Rôle of the Liver in Acute Polycythemia: A Mechanism for the Regulation of the Red Corpuscle Content of the Blood, Jour. Pharmacol. and Exper. Therap., 1915, vii, 169.

V. 191

and other emotional states are known to stimulate discharge of suprarenal secretion. They also induce polycythemia. Evidence for the theory is found, further, in the absence of polycythemia after fright, asphyxia and other conditions in animals in which the suprarenals have been removed, and also by the fact that the removal of the suprarenals completely upsets the control of the red count in a few hours.

Theoretically, says Lamson, a mechanism operating by any decrease below the normal oxygen content of the blood, stimulating the splanchnic nerves and acting on the suprarenal glands causing an increased output of epinephrin, and a direct action of this substance on the liver, and thus increasing the red cells, is possible. The blood after obtaining the necessary content of oxygen would then cease to stimulate the suprarenals, the epinephrin output would fall, and consequently the stimulation of the liver would cease, and the count would then decrease until the oxygen content became sufficiently low again to cause suprarenal stimulation, and an increase in the number of red cells. Furthermore, on the hypothesis here advanced, the body would not necessarily need to wait until the oxygen content of the blood is below normal before responding by an increase in the number of red cells. The outpouring of suprarenal secretion as a result of the major emotions might lead to a preparation for eventualities even before there is any asphyxia or actual lack of oxygen. This would be in harmony with the rôle of the suprarenals in relation to the mobilization of blood sugar for muscular emergencies, as it has been suggested by Cannon and his collaborators.[3]

MIXED ANTITYPHOID AND ANTIPARATYPHOID INOCULATION

Assuming the prophylactic value of inoculation with a killed culture (vaccine) of *Bacillus typhosus* against typhoid fever, the propriety and feasibility of using, instead of the typhoid vaccine alone, a mixed vaccine containing the specific organisms of the two closely allied diseases, paratyphoid A and paratyphoid B, naturally follow. The intent, of course, is to protect an individual by one series of inoculations against all three diseases. The clinical type of disease produced by these three organisms is so similar as hardly to permit differentiation at the bedside. The causal microorganisms, however closely allied, are nevertheless severally specific, and possess definite differentiating characteristics. Each stimulates the production of its own peculiar antibodies, and an immunity acquired or produced against one does not protect against the others. These biologic principles seem well established. They accord with clinical experience and harmonize with laboratory data.

The idea of using a combined vaccine is quite natural, and the suggestion, while more or less recent, is yet old enough to have accumulated a literature comprising several titles. Apparently it has attracted little attention in this country despite the work done here with antityphoid inoculation. The prevalence of both paratyphoid A and paratyphoid B infections in parts of the European war zone has reawakened considerable interest in the subject, and the advisability and feasibility of the procedure have been the subject of some discussion in the foreign medical press. Paratyphoid infections, at least paratyphoid A infections, are sufficiently common to render this question worthy of our serious consideration. If, other things being equal, we can by one and the same procedure protect an individual against three serious infections, it would seem the part of wisdom to do so. The matter, however, is hardly so simple as all this. The principles that underlie the use of killed micro-organisms, both in therapy and in prophylaxis, and the most effective methods of applying them, are not as yet fully understood. The body's defenses against disease are anything but simple; on the contrary, they are usually multiple and complex. It has been pointed out by thoughtful men that the introduction into the human body, by the parenteral route, of any foreign protein, however small the quantity, is not a matter to be undertaken too lightly. It sets in motion complex chemical reactions, the ultimate effects of which we can but dimly appreciate. And the careful scientist, well aware that he is treading a hazy way, looks somewhat askance at mixed vaccines of whatever kind or purpose. Nevertheless, so far as concerns our present comprehension of these matters, the use of the mixed vaccine suggested seems entirely reasonable. Admitting, then, the need of such protection (and this is quite evident with regard to typhoid and paratyphoid A infections), would it be advisable to adopt the use of a mixed vaccine?

Of course, several questions immediately suggest themselves. Is there any evidence of the practicability of the procedure, of its harmlessness, of the degree of protection afforded against the several diseases? What is to be the dosage employed? How much reaction is to be expected from this dosage? These pertinent queries may be answered with at least some degree of satisfaction.

Kabeshima,[1] basing his work on animal experimentation, put into practice in the Japanese navy the use of a mixed vaccine. This was prepared of equal numbers of the three bacteria in question, but the dose given did not exceed in total numbers the dose given of the typhoid vaccine alone. The reactions observed, both local and general, do not seem by this method to have been severe, and were quite comparable to what occurs in the administration of the typhoid vaccine alone. Much care was taken, however, and the inoculated were

3. Cannon, W. B.: Bodily Changes in the Emotions of Fear, Pain, Hunger and Rage, New York, 1915. The Emotions and Alimentation, Current Comment, THE JOURNAL A. M. A., Feb. 27, 1915, p. 749.

1. Kabeshima: Centralbl. f. Bakteriol., Part 1, Orig., 1914, lxxiv, 294.

kept at rest for a short period. Use was first made of separate vaccines, successively given, and later resort was made to the combination. From 1908 to 1911, in the Japanese navy, among a force of about 45,000 men, there were inoculated, by these methods, 28,343 men against typhoid, 18,834 against paratyphoid A and 11,884 against paratyphoid B. From 1909 to 1911 there were observed in Japanese naval hospitals 367 cases of typhoid, of which 68 were among inoculated persons, with 5 deaths, and 299 among uninoculated persons, with 40 deaths; 289 cases of paratyphoid A, of which 71 were among inoculated persons, with 2 deaths, and 218 among uninoculated persons with 5 deaths; and 447 cases of paratyphoid B, all among uninoculated persons, with no deaths.

Vincent[2] states that in an experience of about 4,000 inoculations with a mixed vaccine, the results have been good, and the immunity is as high for paratyphoid as for typhoid. He says that the same results have been established in the Italian army. He suggests that it is just as reasonable to vaccinate simultaneously against typhoid and the paratyphoid fevers as against typhoid and smallpox, which is commonly done.

Widal,[3] after a review of the subject, speaks favorably of his own experience with a mixed vaccine, but is cautious in the expression of his opinions. Chantemesse[4] is of a similar opinion. Since the paratyphoid fevers are less frequent and more benign than typhoid, he suggests a mixed vaccine containing 50 per cent. of *Bacillus typhosus,* 30 per cent. of *Bacillus paratyphosus* A and 20 per cent. of *Bacillus paratyphosus* B, avoiding in this way the objection of possible severe reactions to be expected if the full dose of all three is administered.

If careful consideration is given to the opinions expressed in the rather meager literature, and to the broader view of the entire question, attention is focused on certain salient points which are determinative in character. In the first place, the prophylactic value of the typhoid vaccine, despite a protesting minority, is very generally admitted and endorsed. The prevalence of the paratyphoid infections, especially paratyphoid A, is by no means restricted, and in all likelihood they are more widespread than is appreciated. Their differentiation is dependent entirely on the laboratory, which is not so generally available, and in its absence the paratyphoid fevers often go diagnosed, doubtless, as typhoid.

It seems evident both on theoretical and on practical grounds that just as good immunity may be produced by vaccination against the paratyphoid infections as against typhoid, either by successive vaccinations with the corresponding micro-organisms, or by the mixed vaccine. Moreover, the observations of several[5] support the view that successive vaccinations with the different organisms will not produce so satisfactory immunity as will the combined method, especially with regard to those last injected, unless there intervenes a considerable time interval between the various vaccinations. And this seems to be unaffected by the order in which they are given.

The dosage of the mixed vaccine does not appear yet to be satisfactorily determined. The desire, of course, is to give the full dosage of each; but when combined, the resulting number to be injected forms a very large dose. As noted, several methods have been used and others suggested. This practical point remains to be determined with more exactitude in order to avoid serious or dangerous reactions. Perhaps smaller doses with a greater number of repetitions might achieve the desired result. In any event, very severe reactions must be in some way avoided.

Of course, one must realize that there are limitations to all things, and vaccinations of this character must not be allowed to run riot, which is a danger more real than imaginary. Neither vaccination nor any other procedure should be carried to extremes. Reason and judgment, however, at present would seem to approve the idea of using a mixed vaccine for the typhoid and paratyphoid infections; and it especially commends itself to us here in the United States, where so much good work has been done with the typhoid vaccine. If a practical method of using this mixed vaccine can be devised, it seems to promise results worthy of our effort.

2. Vincent: Bull. de l'Acad. de méd., 1915, lxxiv, 33, 194.
3. Widal: Bull. de l'Acad. de méd., 1915, lxxiv, 32, 148, 216.
4. Chantemesse: Bull. de l'Acad. de méd., 1915, lxxiv, 35, 229.
5. Dreyer, Georges; Walker, E. W. A., and Gibson, A. G.: Lancet, London, Feb. 13, 1915, p. 324.

AN ANCIENT NARCOTIC

Among the menaces, aside from liquor and disease, to which some of the American Indians are said to be exposed at the present time, is the use of a natural product variously known as mescal buttons, peyote or pellote. This consists of parts of a succulent spineless cactus, shaped like a carrot with a hemispheric head. When they are chewed and swallowed, or used in the form of a tea-like decoction, a peculiar form of intoxication or seminarcosis is brought about. The use of these plant products has become a part of certain ceremonials among some of the Indians. They attribute divine powers to the drugs contained in the peyote, and the ceremony attending its use is of the nature of a religious rite in which many of the tribes of the southern plains take part. Diguet[6] has described the manner in which some of the Indians of the northern regions of Mexico eat the plant and induce the hallucinations which are a part of its effect. They chew the pulp, which has been cut into small pieces, and speedily spit out the saliva, which at first dissolves a bitter substance. Then they swallow subsequent portions, from

6. Diguet, L.: La Sierra du Nayarit et ses indigènes, Nouvelles arch. missions sc., 1899, ix, 622.

which the active principle is dissolved little by little and absorbed. The almost miraculous properties, resembling the behavior of hashish or Indian hemp, make the plant appear to the Indians as a food for the soul, through the use of which they can communicate in their hallucinations with the gods. The drug is said to ward off the feeling of fatigue, and its use is greatly varied.[7]

As might be expected in the case of a substance of such unique narcotic properties, its use has tended to spread far beyond the southern tribes which first collected the plant. The parcel post has begun to be a factor in distribution, and agents of the United States government have traced shipments in this way from Texas to the Menominee Indian Reservation in Wisconsin.

So far as is known, no therapeutic or remedial value of the plant used, *Lophophora,* has been demonstrated. Its chemical and toxicologic properties have been somewhat investigated, and a number of alkaloid-like and resinous compounds have been isolated from it.[8] The accounts of the effects differ considerably, but agree in the statement that the drugs produce beautiful color visions. The pupils become dilated. Depression of the muscular system, and partial loss of tactile and other senses has been described. Some of the isolated alkaloids, described under the names mescalin, anhalonidin, anhalonin, etc., by Lewin and Heffter produce comparable effects.

According to Safford[9] of the Bureau of Plant Industry, this "mescal button" of Texas is identical with what was known as the teonanacatl or "sacred mushroom" by the Aztecs. Like the Indians of the present day, these tribes of centuries ago obtained their supply of the narcotic drug through the medium of messengers, who observed certain rites in collecting it and who were received with ceremonial on their return. The mails now serve as the messenger to the Indians of our northern reservations, yet these people attribute to the drug the same divine properties as did the ancient Mexicans, and they combine its worship with the religion they have received from Christian missionaries. That a narcotic cactus should have been mistaken by the early Spaniards in Mexico for a mushroom is not regarded as surprising by Safford, because of the remarkable resemblance of the dried "buttons" to peltate fungi. The knowledge of botany among the Aztecs furnished no distinction between a flowering plant and a fungus so long as they looked alike.

7. Mooney, J.: The Mescal Plant and Ceremony, Therap. Gaz., 1896, xx, 7.

8. Lewin, L.: Arch. f. exper. Path. u. Pharmacol., 1888, xxiv, 401; 1894, xxxiv, 374. Heffter, A.: Ibid., 1894, xxxiv, 65; 1898, xl, 384. Dixon, W. E.: Jour. Physiol., 1899, xxv, 19. Prentiss, D. W., and Morgan, F. P.: Therap. Gaz., 1895, xix, 579. Ewell, E. E.: Jour. Am. Chem. Soc., 1896, xviii, 624. Mitchell, S. W., and Eshner: Brit. Med. Jour., Dec. 5, 1896, p. 1625. Ellis: Lancet, London, June 5, 1897, p. 1540. The plant is sometimes described as Anhalonium lewinii.

9. Safford, W. E.: An Aztec Narcotic (Lophophora Williamsii), Jour. Heredity, 1915, vi, 311.

THE ACTION OF COCAIN

Aside from its action as a local anesthetic, and its stimulating and then depressing action on various parts of the central nervous system, cocain has three effects which have especially aroused the interest of clinicians and pharmacologists. These are the dilation of the pupil, the local constriction of certain blood vessels, and the acceleration of the heart sometimes seen in cases of poisoning by this drug. The first two are of very practical importance. Cocain is in constant use as a mydriatic, and extensive use is also made of its constricting action on the dilated vessels of the conjunctiva, etc. Its advantages as a local anesthetic over its more recent rivals are in part attributed to its local vasoconstricting effect. Since the introduction of mixtures of novocain, etc., and epinephrin, however, this inherent advantage of cocain has become of less importance; the epinephrin adds to these mixtures an important action not possessed by the anesthetics alone.

There has been much discussion as to just how cocain brings about dilatation of the pupil and the local constriction of blood vessels. For many years the view has been current that it stimulates the endings of the sympathetic nerves in the iris. This view was based chiefly on the observation that after these nerves were cut and allowed to degenerate, cocain had a much less dilating effect on the pupil, or none at all. This explanation has never been entirely satisfactory; all writers have had to admit that it does not explain all the observed facts. It has been accepted, however, as the more plausible explanation for the major part of the facts, and recent writers seem to have been little disturbed by the facts which it does not explain. The other actions, the vasoconstricting and the acceleration of the heart, have not been the subject of much investigation, but there has been a tendency to explain them also as a result of an increased activity of sympathetic nerve endings.[1] In fact, cocain is now frequently grouped with epinephrin as a drug having a selective stimulating action on the endings of the true sympathetic nervous system.[2]

It appears, however, from recent work carried out by Kuroda,[3] in the pharmacologic laboratory of Professor Cushny of London, that such a generalization was premature and not sufficiently well supported by experimental facts. Kuroda showed that the action of cocain differs widely from that of epinephrin or sympathetic nerve stimulation: thus it dilates the vessels when perfused through an organ, whereas epinephrin or sympathetic nerve stimulation causes an intense constriction; it depresses the action of the isolated heart, whereas sympathetic nerve stimulation or epinephrin powerfully stimulates this organ; small doses

1. Meyer, H. H., and Gottlieb, R.: Pharmacology, Clinical and Experimental, p. 158.

2. See, for example, Wolfsohn, J. M.: The Normal and Pathologic Physiology of the Visceral Nervous System, THE JOURNAL A. M. A., May 16, 1914, p. 1535.

3. Kuroda: Jour. Pharmacol. and Exper. Therap., 1915, vii, 423.

of cocain augment the activity of the intestine, and large doses depress it, whereas with epinephrin or sympathetic nerve stimulation there is only a depression. There is a similar lack of correspondence between the action of cocain and of epinephrin or sympathetic nerve stimulation in the case of the stomach, uterus, bladder and salivary glands. In nearly all cases, cocain was found first to increase the activity of unstriated muscle and then to depress it, whatever may be the nature of the sympathetic control; in some instances the phase of increased activity was not observed. In view of these results and the fact that the explanation that the dilatation of the pupil results from a stimulation of the endings of the sympathetic nerve has always been regarded as inadequate, Kuroda argues that the dilatation of the pupil under cocain also arises from a direct depressing action of the drug on the muscle of the iris. The vasoconstricting action of cocain which is seen when the drug is applied directly to a congested mucous membrane is not so readily explained, but it is evidently of a different character from that caused by epinephrin or sympathetic nerve stimulation; the effects of the latter agencies are very evident in isolated organs, and are always readily obtained, whereas cocain causes a dilation of blood vessels under similar conditions. The acceleration of the heart in the intact animal is evidently not due to a direct action of the drug on the cardiac muscle or on the sympathetic nerve endings, and so is not analogous to the action of epinephrin; it may be due to an action on the central nervous system.

At first thought it may seem rather discouraging that there should still be so much doubt as to the true action of such a widely used mydriatic as cocain; but it should be remembered that such problems are very complex and that the number of men seriously working to elucidate them are few.

FURTHER FACTS ABOUT PLASMAPHAERESIS

Some time ago THE JOURNAL explained[1] the term "plasmaphaeresis," which was introduced into medical literature to describe a mode of plasma removal, from the circulating blood, as devised by investigators at the Johns Hopkins Medical School. The underlying idea was to institute repeated removals of considerable quantities of blood, separate the corpuscles by vigorous centrifugalization, replace the plasma by Locke's solution, and reinject this together with the sedimented blood cells. A procedure of this sort gave promise of removing large quantities of the circulating fluids of the body and accomplishing many of the underlying aims of venesection without the serious danger which is promptly caused by greatly reducing the oxygen-carrying capacity of the blood represented in the blood corpuscles. It seemed possible, in view of the evident survival of the reinjected erythrocytes, to attain the desired benefits of venesection, particularly in some types of toxemia, without introducing attendant harmful consequences which have been responsible for the abandonment of bloodletting in all but few cases.

There are many details of a method so promising and yet so serious in its physiologic aspects which deserve and demand to be investigated before the clinician would be justified in considering any applications to human therapy. Some of these have been supplied in more recent studies at Baltimore by Turner, Marshall and Lamson.[2] These show that the maximum total amount of blood which can be removed by plasmaphaeresis may be considerably greater than was reported earlier.[1] As much as five times the original volume of blood has been withdrawn in the course of five days by repeated bleedings and return of the corpuscles. The danger of collapse appears to be greatest when the bleeding is very rapid. The blood pressure is progressively lowered in plasmaphaeresis. Warning of danger may be obtained by watching this carefully, and the possibility of collapse from overbleeding thereby averted.

One of the first effects of plasma removal by the method of the Baltimore school is uniformly to raise the count of the blood corpuscles. The rise in number may occur even during withdrawal of the blood, and the effect is increased in some degree by the return of the corpuscles abstracted. In spite of the periodic increments caused by successive operations of plasmaphaeresis, the cumulative effect soon gives place to a slight downward tendency. No evidence of acute destruction of the red corpuscles reinjected has been seen at any time. The change in the number of leukocytes shows, as might be expected, a very different picture from that of the red cells. With few exceptions, the effect of plasma removal is to reduce the number of white corpuscles considerably. This, the investigators remind us, is possibly due to the fact that, being harder to separate from the plasma in the centrifuge, many are lost. A slight rise in temperature has been observed during each day of plasmaphaeresis, with a return to normal at night. This may be due to the saline injections alone, since they have been observed to produce slight febrile reactions.

One result of this mode of "washing out" the vascular system with saline solution, while leaving the corpuscles intact, is the lowering of the protein content of the plasma in every case, as might be expected. The quantitative results, however, are not precisely such as would be obtained by washing out an inanimate system containing the same volume of blood. There is a speedy partial restoration of protein into the diluted

1. Plasma Removal — Plasmaphaeresis, editorial, THE JOURNAL A. M. A., Feb. 6, 1915, p. 514.

2. Turner, B. B.; Marshall, E. K., Jr., and Lamson, P. D.: Observations on Plasmaphaeresis, Second Paper, Jour. Pharmacol. and Exper. Therap., 1915, vii, 129.

V. 191

residual plasma. Contrary to what might be anticipated, the urea and nonprotein nitrogen in the blood after profound plasma removal do not decrease, but may actually show a rise. What the significance of this unexpected phenomenon is remains to be determined. It may be that there is a depressed renal function and a reduction of urea excretion by the kidneys after plasmaphaeresis; or there may be a stimulation of nitrogenous metabolism leading to the increase in catabolites noted. The apparent ineffectiveness of plasmaphaeresis in lowering such significant components as urea and nonprotein nitrogen needs to be explained before the procedure can merit favorable consideration as a method of withdrawing waste or toxic products from the organism.

Current Comment

TIGER-BONE THERAPY AND "CLINICAL EXPERIENCE"

In China the administration of powdered tiger-bone is — or was — a favorite form of treatment in cases of supposed cardiac weakness. The theory is, presumably, that the cardiac strength of the tiger would be a good thing for the patient to acquire. Since many patients have recovered after taking tiger-bone, and no one has proved that they might not have died had they failed to take it, "clinical experience" stands back of the treatment; and where is the skeptic so rash as to challenge that? The Chinese physician believes in his tiger-bone therapy, and, with the best interests of his patient at heart, insists on obtaining absolutely true and authentic tiger-bone. Not satisfied with the assertions of the dealers, the conscientious Chinese physician subjects his tiger-bone to a kind of physiologic standardization. He offers the bone in question to a dog! If it is an ox-bone — a frequent form of substitution — the dog will seize and eagerly gnaw it, whereas, according to all the teachings of Chinese pharmacognosy, if it is a tiger-bone the dog will depart hurriedly with his tail between his legs. Very foolish? Yes! But before we smile superciliously at the Chinese medical man, let us turn over a few pages to the report of the Council on Pharmacy and Chemistry on "So-Called Secretin Preparations."[1] After reading this report let us put to ourselves, squarely and honestly, the question: Has the attitude toward secretin therapy, of a certain portion of those who represent Western modern medicine, really been much more scientific than that of the Chinese medical profession toward tiger-bone therapy? On the basis of a hypothesis scarcely less crude and unsubstantiated than that which assumes that tiger-bone is of value in heart disease, it has been assumed that secretin is of value in gastro-intestinal diseases. On the ground of "clinical evidence" scarcely more critical than that exhibited by our confrères in the antipodes, it has been asserted that alleged secretin preparations actually are efficacious. Indeed, in one respect the methods of the Chinese physician appear more scientific than those of his Western brethren. To the best of his ability, the Oriental at least makes sure that he is administering genuine tiger-bone; he does not rely on the unverified word of his dealer alone. The American physician has not been making the least effort to ascertain whether his supposed secretin preparations are truly such and, as a matter of fact, scientific investigation seems to indicate that some of these products contained no secretin at all! Whatever one may think of the validity of his test, the Chinese physician does his best according to his lights. As to "clinical experience": Dr. Jacobi has well said that some people make the same mistake a hundred times and call it "experience."

1. Propaganda for Reform Department, THE JOURNAL A. M. A., this issue, p. 208.

CARRIERS OF THE ORGANISMS PRODUCING PNEUMONIA

It has not been easy to understand how pneumonia of the lobar type spreads and maintains its high incidence from year to year. Transmission by the ordinary method of immediate contact will certainly not account for the occurrence of a large number of the cases; it has become necessary, therefore, to consider other modes familiar in the spread of infectious diseases. The existence of an intermediate host has not appealed as likely to the students of the epidemiology of pneumonia. Accordingly, attention has lately been focused on the possibility of healthy carriers as agencies for the otherwise unexplained transmission. The study of the subject is complicated by the fact that there is an abundant bacterial flora normally found in the upper respiratory passages and by the added fact that there is a great variation in the virulence of different strains of pneumococci, the group which includes the organisms responsible for lobar pneumonia. Those strains which are indistinguishable from ordinary sputum pneumococci produce at most a mild form of pneumonic disease. Therefore it is desirable to know something about the distribution of the more virulent types which can be held responsible for the severer manifestations of infection. According to Dochez and Avery[1] of the Rockefeller Institute for Medical Research, lobar pneumonia in 75 per cent. of instances is due to specific types of pneumococci possessed of a high degree of pathogenicity. Although pneumococci occur in the mouths of 60 per cent. of normal individuals, such organisms are readily distinguishable from the highly parasitic types of pneumococcus responsible for the severe forms of lobar pneumonia, a convincing proof that infection in this disease is, in the majority of instances, not autogenic in nature, but is derived from some extraneous source. In a high percentage of instances, according to the New York investigators, healthy persons intimately associated with cases of lobar pneumonia harbor the disease-producing types of pneumococcus. In

1. Dochez, A. R., and Avery, O. T.: The Occurrence of Carriers of Disease-Producing Types of Pneumococcus, Jour. Exper. Med., 1915, xxii, 105.

every such instance carefully investigated, the pneumococcus isolated has corresponded in type with that of the infected individual. Convalescents from pneumonia carry for a considerable length of time the type of pneumococcus with which they have been infected. The investigations of Dochez and Avery thus show that there are two sources of danger in the spread of the pneumococcus infection. One lies, as they point out, in the occurrence of healthy carriers of disease-producing pneumococci among individuals associated with cases of pneumonia. The other source is indicated in the fact that patients recovering from the disease harbor the responsible organism for a considerable length of time. Under such circumstances it is not easy to trace a given case to the carrier responsible for it. The sporadic occurrence of lobar pneumonia is explained by the same features that have made it difficult to establish a well-defined epidemiology of the disease. The recognition of the nature of the carriers that may exist marks an important step in the direction of progress.

THE SHERLEY AMENDMENT IS CONSTITUTIONAL

A few weeks ago[1] THE JOURNAL described the attempt on the part of the exploiters of "Eckman's Alterative," a fraudulent "consumption cure," to cripple the Food and Drugs Act by attacking the constitutionality of the Sherley Amendment. This amendment declares that a drug product shall be deemed misbranded if false and fraudulent therapeutic claims are made for it. The Eckman concern, which was found guilty of making false and fraudulent curative claims, carried the matter up to the Supreme Court of the United States attacking the constitutionality of the Sherley Amendment. Last Monday (January 10) Justice Hughes delivered an opinion for the court, every member of the Supreme Court having agreed to it. "We find no ground," Justice Hughes is reported as stating, "for saying that Congress may not condemn interstate transportation of swindling preparations accompanied by false and fraudulent statements, as well as lottery tickets." The decision is one that means much to the health and safety of the public and will have the unqualified approval of all except the "patent medicine" fakers and their satellites.

THE DETECTION OF MALARIAL PLASMODIA

A method for obtaining malarial plasmodia in blood for diagnostic and other purposes, which was devised several years ago by Bass and Johns, has recently been described in detail by these investigators.[2] It involves the concentration of the "crescents" by their stratification into a distinct layer when blood containing them is centrifuged at a high speed. The fundamental principles involved are the fact that a malaria plasmodium with its host erythrocyte is larger than the nonparasitized erythrocytes, and that when centrifuged at proper speed for a sufficient length of time, the larger cells rise to the top of the cell column, while the smaller cells collect beneath. Most of the leukocytes are still larger than most of the parasitized cells, and accordingly rise to a higher level in the cell column or even to the surface. In a sufficiently centrifuged tube the successive layers thus include nonparasitized erythrocytes, parasitized red cells, leukocytes and serum. If citrated blood is used, platelets may be suspended in the plasma. Helpful newer details respecting this ingenious procedure, by which almost innumerable plasmodia may sometimes be brought into a single microscopic field, may be consulted in the original paper. The method has an added usefulness in that it offers the possibility of obtaining large quantities of plasmodia for experimental purposes either directly from the the blood stream or from cultures in vitro.

1. Attempting to Cripple the Food and Drugs Act, editorial, THE JOURNAL A. M. A., Nov. 20, 1915, p. 1822.

2. Bass, C. C., and Johns, F. M.: A Method of Concentrating Malaria Plasmodia for Diagnostic and Other Purposes, Am. Jour. Trop. Dis., 1915, iii, 298.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Ask Sanitary Surveys.—The mayors and health officers of Champaign and Urbana have requested the bureau of sanitary engineers of the State Board of Health to make a sanitary survey of these cities.——Jacksonville has also asked for a sanitary survey.

Personal.—Drs. Ora L. Pelton, Ora L. Pelton, Jr., and Samuel L. Gabby, Elgin, are arranging for a third story to be added to the new Rittberger Building which will be used for their offices, laboratory and a small hospital.——Dr. William J. Riley, Jr., has been appointed an assistant physician on the staff of the Elgin State Hospital.——Dr. William J. Uppendahl, Peoria, who has been attached to the British Hospital Service in Europe for six months, now writes that he will remain in the war zone for a second six months.——Dr. Victor A. Bles of the staff of the Elgin State Hospital, who has been seriously ill, is reported to be improving.

Chicago

Bids for Hospital Addition.—Bids were opened January 3 for the County Hospital addition consisting of the finishment of basement, refrigerator plants, modern kitchen and bakery and a complete tunnel system. The lowest bid was $527,000.

Study of Tuberculosis.—The Robert Koch Society for the Study of Tuberculosis, affiliated with the Chicago Tuberculosis Institute, will hold its seventeenth meeting at the Morrison Hotel, January 19 at 12 noon. Dr. Harry J. Corper of the Municipal Tuberculosis Sanatorium will read a paper on "Complement Fixation in Tuberculosis" and the discussion will be opened by Dr. Ludvig Hektoen.

Personal.—Drs. James M. Neff and Philip S. Chancellor, members of the Chicago unit, have been commended in general orders by General Sir John French for "superlative service" with the American Hospital Units in France.——Dr. William A. Evans, who was operated on for disease of the gallbladder, January 4, is reported to be making satisfactory progress toward recovery.——Dr. Arthur D. Black has accepted an invitation of the University of California to give a course of lectures during January in that institution.——Dr. Coleman G. Buford delivered an address before the Galesburg Medical Society, January 4, on "The Goiter Question."

Gorgas in Chicago.—Major-General William C. Gorgas, Surgeon-General, U. S. Army, spent a busy six days in Chicago and whether it was a continuous round of pleasure or not, there is no question as to the continuity of the entertainment. In addition to luncheons, dinners and it may be

breakfasts, at which he was the guest of honor each day during his stay in Chicago, General Gorgas appeared before the Geographic Society of Chicago on January 7 and had presented to him the society's gold medal on account of his work in transforming living conditions in the Panama Canal Zone and making it habitable for white men. Mr. Henry J. Patten, president of the society, was toastmaster; Dr. Frank Billings made the presentation address and General Gorgas spoke on "Sanitation in Its Relation to Geography." On January 10 he was the guest of honor at a banquet given under the auspices of the Chicago Single Tax Club and nine other medical and lay organizations of the city. On this occasion Dr. John B. Murphy presided and General Gorgas spoke on "Sanitation and Single Tax," stating his belief that single tax by taxing land values will bring unoccupied land into use and thereby relieve congestion in cities and increase wages. He also spoke entertainingly on the sanitary problems in Havana and in the Canal Zone, narrating the way in which they had been met and disease conquered. He was entertained at luncheon by the City Club on the afternoon of January 10, and on January 11 he was the guest of honor at a dinner given at the Quadrangle Club of the University of Chicago at which he spoke on "Sanitation in Relation to Poverty." General Gorgas returned to Washington on January 12.

KANSAS

Food and Drugs Inspections.—According to the December *Bulletin* of the Kansas State Board of Health during October and November, 1915, the inspectors of the department made 1,984 inspections covering all classes of food and drug establishments. Of 359 food products inspected, 181 were classed as passed and 78 as illegal. Of 73 drug products examined, 58 were passed and 15 were illegal.

Personal.—Dr. Lucullus R. Sellers, who has been connected with the State Hospital at Larned for twelve years and who resigned to take effect January 1, has been prevailed to withhold his resignation until the first of March. ——The office of Drs. Charles R. Silverthorne, Maplehill, was burned December 12.——Dr. John P. Kaster, Topeka, has been appointed a member of the National Board of First Aid Standardization.

State Hospital Association Organized.—The hospitals of Kansas have organized a state association which held its first meeting December 30 at Topeka when a constitution and by-laws were adopted and the following officers were elected: president, Dr. John T. Axtell, Newton; vice presidents, Drs. Samuel Murdock, Jr., Sabetha; John C. Hall, McPherson, and Frank W. Shelton, Independence; and secretary-treasurer, Dr. William R. Dillingham, Halstead. This association will be affiliated with the American Hospital Association.

MARYLAND

Doctor Held Under Drug Act.—Dr. Hugh M. Boring, Baltimore, was held in $1,000 bail for a hearing on January 14 on the charge of violating the Harrison Narcotic Law by furnishing prescriptions for opium and other drugs without putting on them the correct names and addresses of the persons for whom they were intended. It is alleged that Dr. Boring sold the prescriptions indiscriminately.

Personal.—Dr. William H. Welch of the Johns Hopkins University arrived in Baltimore on January 5, after a six month's trip to the Orient.——Dr. Karl H. Van Norman, formerly of the Johns Hopkins Hospital and now a captain in the Royal Canadian Army Medical Corps, is in charge of of a British hospital division at Ramsgate, England. The hospital at Ramsgate has 600 beds and Dr. Van Norman has medical supervision of over 125 patients, all war victims. ——Dr. C. Reid Edwards has been appointed superintendent and Dr. Louis A. Boie, resident surgeon of the Kernan Home for Crippled Children.——Dr. Charles A. Overman, Baltimore, who has been ill at the University Hospital for five months, is reported to be convalescent.

Changes in the Staff at the Hopkins.—Two important changes in the hospital staff have been announced at the Johns Hopkins Hospital. The resignation of Dr. Leonard G. Rowntree, associate professor of medicine, was accepted, and the appointment of Dr. Lysander P. Holmes of the health department of New York City as third assistant superintendent, was given out. Dr. Rowntree has been appointed professor of medicine at the University of Minnesota. The appointment of Dr. Holmes is to fill the vacancy which was caused by the resignation of Dr. Karl H. Van Norman, first assistant superintendent, about two months ago. Dr. Ralph B. Seem, Baltimore, second assistant, was promoted to Dr. Van Norman's place and Dr. Lewis A. Sexton, third assistant, was put in Dr. Seem's position. Dr. Holmes comes from the Riverside Hospital, which is operated by the New York Health Department.

MICHIGAN

Red Cross Must Not Be Used.—The National Red Cross has lodged a complaint with the attorney-general that fifty-seven physicians of Saginaw are violating the federal law by using the Red Cross emblem on their motor cars.—— Physicians of Muskegon are changing the Red Cross on their motor cars to a green emblem of similar design.

Personal.—Dr. Alfred H. Boon, Painesdale, has resigned from the Copper Range medical staff and left on January 6 to join the Royal Army Medical Corps.——Dr. John C. Brown, Battle Creek, has declined reappointment to the state advisory board of pardons.——Dr. Ralph C. Apted, Grand Rapids, recently underwent further operation in Augustana Hospital, Chicago, and is said to be doing well. ——Dr. David L. Trear has resigned as president of the National Bank of Commerce of Adrian to accept a position as head of the welfare work among the employees of the General Motor Company, Flint.

MINNESOTA

First Students for Mayo Foundation.—The first delegation of students to go to the Mayo Hospital, Rochester, under the Mayo Foundation plan, will leave the University of Minnesota, April 1.

State Board Appointments.—Drs. David N. Jones, Minneapolis, and Werner Hemstead, Brainerd, have been appointed members of the State Board of Health, to succeed Drs. Frank Burton, Minneapolis, and Olaf J. Hagen, Moorhead, and L. P. Wolf, St. Paul, has been reappointed a member of the board.

New Officers.—Olmsted County Medical Society has elected Dr. Walter D. Shelden, president; Dr. William C. MacCarty, vice president, and Dr. Henry W. Meyerding, secretary-treasurer, all of Rochester.——Hennepin County Medical Association, at Minneapolis, January 3: president, Dr. John G. Cross; and vice presidents, Drs. Arthur S. Hamilton and Fred L. Adair.——Red River Valley Medical Association, at Crookston, December 16: president, Dr. Wilhelm S. Anderson, Warren; vice president, Dr. J. Frank Norman, Crookston, and secretary-treasurer, Dr. Franklin M. Dryden, Crookston.

Personal.—Dr. Kenneth Taylor, St. Paul, has returned after work of more than a year in the American Ambulance Hospital and the hospital of Dr. Blake at Ris Orangis.—— Dr. Sheridan G. Cobb, Merriam Park, St. Paul, who underwent operation for appendicitis, January 1, is reported to be doing well.——Dr. Arthur J. Dohm, St. Paul, fractured his right forearm while cranking his automobile, December 25. ——Dr. Adrien J. Kirghis, St. Cloud, who while visiting France was pressed into the army service, returned from France, December 17.——Dr. Carl A. Scherer of the University of Minnesota has resigned and will move to Fargo, N. D., where he will specialize in diseases of children.—— Drs. George E. Sutton and Zerah P. King, Minneapolis, have started for Europe where they will serve in the American Ambulance Hospital at Neuilly, France.——Dr. Charles A. Hobbs, Minneapolis, deputy coroner of Hennepin County, is ill with scarlet fever in the contagious ward of the City Hospital.——Dr. Rudolph A. Beise, Brainerd, was operated on recently at Rochester for gastric ulcer and is reported to be doing well.——Dr. James S. Gilfillan, St. Paul, was operated on for appendicitis, recently.——Dr. Fred C. Eakins, Rochester, has left for Winnipeg for overseas medical service.

MISSOURI

Hygienist School to Open.—A school for hygienists will be opened in Kansas City this month at which two classes of students will be received, those wishing certificates of proficiency to be issued by the Hospital and Health Board after regular examinations, and those who attend only to obtain personal information.

School Inspectors.—Special commissions as medical inspectors of schools have been issued to forty-six physicians of Kansas City, who will preform this service without pay. About thirty dentists will also be appointed for this work.

Dr. Fred B. Kyger has been appointed chief of staff and Dr. Herbert F. Vanorden, secretary of the staff.

Revision of Health Laws.—A tentative committee to serve under Dr. Paul Paquin, health director of Kansas City, has been appointed by the City Club with the object of eliminating unfit and unpractical laws in the health ordinance. The committee consists of Drs. Homer O. Leonard, Jr., William L. Gist, Mr. C. T. Thompson and Mr. T. M. Finn.

Personal.—Dr. Walter C. Overstreet, Sedalia, is seriously ill with influenza at the Missouri, Kansas and Texas Hospital, Sedalia.——Dr. Fabian L. Pratt, Kansas City, has returned after several months in the war zone.——Dr. Walter S. Sutton, Kansas City, chief surgeon of the Whitney Hospital, Juilly, France, has returned to the United States.

Antituberculosis Notes.—The Municipal Tuberculosis Hospital for Kansas City erected at a cost of about $140,000 and with a capacity for 120 patients, located 10 miles from the business district of the city, was formally opened on December 25. Dr. Paul Paquin, Kansas City, has been appointed general superintendent of the hospital.——The State Board of Health will petition the legislature for an appropriation to erect an additional ward at the State Tuberculosis Sanatorium, State Park.

St. Louis

New Officers.—At the annual meeting of the St. Louis Medical Society the following officers were elected: president, Dr. Louis C. Boisliniere; vice presidents, Drs. Walter Baumgarten and William H. Stauffer; and secretary, Dr. John A. Seabold.

Personal.—Dr. Norman Bruce Carson, who has completed his fifty years of service in the St. Louis-Mullanphy Hospital, was the guest of honor at a dinner at the hospital, November 24. Dr. Carson was presented with a golden loving cup by the medical staff, Dr. Elsworth Smith, Jr., making the presentation address. Among other gifts to Dr. Carson was a golden casket from the Sisters of Charity, who conduct the hospital.——Dr. Nathaniel Allison has returned after three months' service in the American Ambulance, Paris.——Dr. Frederick Hagler has returned after war service in Serbia.

MONTANA

New Hospital.—Local physicians headed by Dr. Frederick F. Attix, Lewistown, have completed plans for the erection of a building for medical, surgical and laboratory purposes. The building and equipment will represent an outlay of $40,000.

Personal.—Dr. Rex R. Frizzell, Great Falls, has gone to California with his father, Dr. John W. Frizzell, who is convalescent after an automobile accident.——Dr. Benoni A. Place, Great Falls, has been appointed physician of Cascade County.——Dr. Herbert H. Judd, Bozeman, has been appointed physician of Gallatin County.——Dr. Percy F. Kearney, Great Falls, received an impacted Colles fracture recently while cranking his automobile.——Dr. Clarke S. Smith, Kalispell, has returned after six months service in the Royal Army Medical Corps.

NEW JERSEY

Health Board Slogan.—A stamp, reproducing the badge of the board of health commissioners of Newark, has been adopted by the board and will be used on its mail matter in the future. In the center of this stamp is printed "Get the Health Habit. Help Us to Help You."

Personal.—Mayor Mount has appointed Dr. Ephraim R. Mulford a member of the Burlington Board of Health.——Dr. and Mrs. Theodore E. Townsend, Westwood, are taking a trip to Bermuda.——Dr. Charles Browne has been elected mayor of Princeton and assumed office January 1.——Dr. Charles E. MacDonald, Ft. Mott, has returned after war service in Germany.——Dr. H. Crittenden Harris, for twenty-one years president of the Glen Ridge Board of Health, has declined to accept reappointment.——Dr. George E. McLaughlin, Jersey City, has been elected president, and Dr. Edward Guion, Atlantic City, secretary of the New Jersey Sanitary Association.

NEW YORK

Health Board Consolidation Favored.—The Phelps Town Board at its meeting, December 28, adopted a resolution recommending the consolidation of the town and village boards of health.

Appropriation for Tuberculosis Hospital.—The Saratoga County Board of Supervisors has appropriated $17,000 for the county tuberculosis sanatorium. This is a reduction of more than $1,500 in the amount asked for by the institution, but is $5,000 more than the appropriation made last year.

Personal.—Dr. Douglas M. Dodd, Elmhurst, a member of the Columbia University unit in Serbia, is now said to be working under the Bulgarians in an attempt to eradicate typhus fever at Nish, Serbia.——Dr. Adolph F. Konther, Brooklyn, has been bequeathed $500 by the will of Rosalie Hentscher, Buffalo.

New York City

Harvey Society Lecture.—The fifth lecture of the present course was given January 15 by Dr. Donald D. Van Slyke of the Rockefeller Institute for Medical Research. His subject was "Present Significance of the Aminoacids in Physiology and Pathology."

Herter Foundation Lectures.—Dr. Victor C. Vaughan of the University of Michigan delivered a course of five lectures on "Poisonous Proteins" at the Carnegie Laboratory, from January 10 to 14, inclusive, under the Herter Foundation of the University and Bellevue Hospital Medical College.

Medical Society of the County of Kings Elects.—At the fifty-ninth annual meeting of this society, held in Brooklyn, Dec. 21, 1915, the following officers were elected: president, Dr. Ralph H. Pomeroy; vice president, Dr. Albert M. Judd; secretary, Dr. Charles E. Scofield; and treasurer, Dr. Stephen H. Lutz.

Neurologists Elect Officers.—At the annual meeting of the New York Neurological Society, January 4, the following officers were elected: president, Dr. William M. Leszynsky; vice presidents, Drs. Frederick Tilney and Robert F. Kennedy; corresponding secretary, Dr. J. Ramsay Hunt, and recording secretary and treasurer, Dr. Charles E. Atwood.

To Build Maternity Clinic.—A three-story fireproof building is to be erected on the north side of One Hundred and Third Street, and 185 feet east of Park Avenue, at a cost of $35,000, which is to used as a free out-door maternity clinic. Operations will not be performed in this clinic but patients will be examined and prepared for operation elsewhere.

Mental Clinic Established.—Announcement was made January 3 by the superintendents of the Long Island State Hospital, Flatbush, and Kings Park State Hospital, that arrangements have been made for a free clinic for the treatment of nervous and mental disorders at the Williamsburgh Hospital, Bedford Avenue and South Third Street, at 10 o'clock on each Saturday morning. For the present at least, Drs. Elbert M. Somers, Brooklyn, and William Austin Macy, Kings Park, will be in charge of the clinic. The Long Island State Hospital already maintains two clinics, one at the institution from 10 to 3 o'clock on Saturdays and the other at the Polhemus Memorial Clinic, Long Island College Hospital, on Fridays at 2 p. m.

Personal.—Dr. William F. Mathews, Brooklyn, deputy health officer of the port of New York, has been designated acting head of the service by Governor Whitman, pending the appointment of a successor to the late Dr. Joseph J. O'Connell.——Dr. Charles A. Whitney returned from abroad, January 2.——Dr. Selden I. Rainforth has been appointed physician to the street cleaning department.——Dr. Katharine B. Davis, formerly commissioner of correction, has been appointed by the mayor, a member of the new parole board.——Dr. John S. Billings, Jr., director of the Bureau of Preventable Diseases of the Health Department, has been designated deputy commissioner of health. He has been succeeded by Dr. Bertram H. Waters, formerly chief of the division on tuberculosis, and Dr. Waters' post has been filled by the appointment of Dr. Clifford Martin.

To Test Validity of "Patent Medicine" Ordinance.—On January 1 the ordinance of the board of health went into effect requiring the manufacturer of proprietary remedies sold in this city either (1) to print on the label on the bottle, package, or other container, the names of all the ingredients to which the therapeutic action of the remedy is ascribed, or, (2) to register this information with the board of health. As anticipated, certain manufacturers of proprietary preparations determined to test the validity of this ordinance. On Dec. 31, 1915, there was served on the department of health a notice of a move for a temporary injunction to be applied for in the supreme court on January 5. This notice was served in the interests of the Charles H. Crittenden Company, manufacturers of Hale's Honey of Horehound and Tar. A similar notice was served on behalf of H. Planten & Son, Brooklyn, manufacturers of Medicated Capsules. In these

V. 191

notices the usual claim was made of the great value attaching to secrecy in the formula of "patent medicines." The department announces that it is not at all disconcerted by this action on the part of "patent medicine" manufacturers since the ordinance was framed by former Health Commissioner Goldwater and trained lawyers from the office of the corporation counsel. It believes that there is no reason to fear that the ordinance will be declared unconstitutional.

NORTH DAKOTA

New Officers for District Society.—At the annual meeting of the Sixth District Medical Association held in Bismarck, the following officers were elected: president, Dr. Gustav A. Mathews, Napoleon; vice president, Dr. Hugo O. Altnow, Mandan, and secretary-treasurer, Dr. William H. Bodenstab, Bismarck.

Recommendations Regarding Health Administration.—After a study of public health administration and organization in North Dakota in the fall of 1915, Surg. Carroll Fox, U. S. P. H. S., says that it may be concluded that there is a great lack of organization and funds with which to carry on public health work in the state. The health measures which have been enacted are more or less scattered among different branches of the government. They should be coordinated and their enforcement imposed on a single state health organization. He therefore makes a number of recommendations looking to improvement in the health service of the state. Among these are that public health activities now performed by the State Board of Health and the public health laboratory and other state agencies be brought together in a department of health which should be divided into a number of bureaus such as communicable diseases, public health engineering, vital statistics, etc. This report is similar to the reports heretofore made by members of the public health service in regard to health administration in various states.

OKLAHOMA

Health Propaganda.—Dr. John W. Duke, Guthrie, state commissioner of health, has enlisted the cooperation of more than 400 daily and weekly newspapers of Oklahoma which will publish short popular articles on hygiene and public health at frequent intervals.

Personal.—Dr. Robert L. Mitchell, Vinita, was thrown from his buggy, recently, in a runaway accident, fracturing his left leg.——Dr. Ernest R. Cavett, Kiel, fractured his clavicle by the overturning of his automobile.——Dr. William R. Butler, Maud, was thrown from his buggy in a runaway accident and was severely injured.——Dr. Walter Penquite, Chickasha, is convalescent after a severe attack of influenza.——Dr. Lee W. Cotton, Enid, was slightly injured and his automobile was demolished in a collision with a Santa Fe train, recently.

Hospital News.—Dr. Fred S. Clinton, Tulsa, is making plans to build a hospital in that city to cost $75,000.——St. Anthony's Hospital, Oklahoma City, has launched a campaign to raise $150,000 for the erection of a four-story addition to the hospital and to establish therein a clinical laboratory to be under the charge of Dr. Abraham Sophian, Oklahoma City.——Dr. Walter E. Wright, Tulsa, has purchased a 50-foot lot on which he will erect a Roentgen-Ray and pathologic laboratory to cost about $25,000. It will be ready for occupancy early in June.

OREGON

Hospital Burned.—The Harney County Hospital, Burns, was destroyed by fire, recently, with a loss of $12,000. One patient lost his life in the fire.

Personal.—Drs. Garrett L. Hynson and John T. LeFevre, Portland, have been under treatment in the Portland Sanitarium on account of septicemia, but are now convalescent.——Drs. Frank E. Boyden, Heppner, and Lawson L. Truax, Klamath Falls, are spending the winter in postgraduate work in the East.

SOUTH CAROLINA

Personal.—Dr. Gottlob A. Neuffer, Abbeville, has been appointed a member of the board of visitors of the State Hospital for the Insane, Columbia.

Minnesota Surgeon in South Carolina.—At the meeting of the Fourth District Medical Society in Wilson last month, Dr. Louis B. Wilson, director of the pathologic laboratory of the Mayo Clinic, Rochester, Minn., was one of the speakers.

Tuberculosis Items.—The new tuberculosis camp near Ridgewood is now being occupied by patients. The ravages done by the windstorm, November 18, have been repaired and the camp has been reconstructed. No harm was done to the patients by the storm and no one was injured by the falling tents.——The Greenville County Antituberculosis Camp was opened November 4. It is the plan of the Antituberculosis League to build several cottages on the grounds for the treatment of private patients. The camp has an initial capacity of twenty-five patients.

State Board Work.—In his annual report to the legislature, Dr. J. Adam Hayne, Columbia, secretary of the State Board of Health, praises the work which is done at the South Carolina Sanatorium, State Park.——During the year a bureau of vital statistics was established and is now in successful operation. The townships of every county in the state are now represented by local registrars. The board is comfortably housed in the University of South Carolina and in the Palmetto Building. From January 1 to October 31, there were 37,642 births and 20,704 deaths reported to the bureau.

SOUTH DAKOTA

Personal.—Dr. Ole W. Rood, Watertown, has started for France where he will enter a military hospital.——Dr. Bert Menser, Bridgewater, has disposed of his practice to Dr. James G. Kennedy, Plankinton. Dr. Menser was the guest of honor at a banquet given by the Commercial Club at Bridgewater, December 1, at which he was presented with a gold-headed cane.——Dr. Harry A. Murnan, Gregory, has been appointed local surgeon of the Northwestern System.

District Society Meetings.—The Fourth District Medical Society at Pierre, December 15: president, Dr. Guy H. Langsdale, Highmore; vice president, Dr. Alfred H. Youngs, Pierre; secretary-treasurer, Dr. Samuel B. Stegeman, Onida.——Seventh District Medical Society at Sioux Falls, December 14: president, Dr. Edwin L. Perkins, Sioux Falls; vice president, Dr. Harry R. Hummer, Canton; secretary-treasurer, Dr. Goldie E. Zimmerman, Sioux Falls.——Watertown District Medical Association at Watertown, December 14: president, Dr. Raymond W. Mullen, Florence; vice president, Dr. Harry C. Parsons, Watertown, and secretary-treasurer, Dr. Harry M. Freeburg, Watertown.——Mitchell District Medical Society at Mitchell, November 16: president, Dr. Andrew H. Hoyne, Salem; vice president, Dr. Frank H. Stewart, Kimball, and secretary treasurer, Dr. Floyd D. Gillis, Mitchell.——Black Hills Medical Association at Lead, November 10: president, Dr. Francis E. Clough, Lead; vice president, Dr. Frederick W. Minty, Rapid City; secretary-treasurer, Dr. Frederick A. Richards, Whitewood.

PENNSYLVANIA

Main Line Physicians Organized.—Fifty prominent physicians of main line towns have organized the Main Line branch of the Montgomery Medical Society, with headquarters at the Merion Cricket Club, Haverford, meetings to be held twice monthly. Dr. Walter Chrystie of Bryn Mawr has been elected president; Dr. Henry F. Smyth of Wayne, corresponding secretary, and Dr. John Harvey of Bryn Mawr, recording secretary.

State to Help Guard Health of Employees.—Commissioner Jackson of the State Department of Labor and Industry is making an appeal for cooperation on the part of employers and employees to fight off occupational diseases that annually claim a large toll in money and lives in this state. A series of pamphlets, entitled "Timely Hints," showing what the diseases are, what causes them and the best method of combating them, is being sent out.

Philadelphia

Educational Director Wanted.—An educational director for nurses' training schools in the state of Pennsylvania will be elected on or about March 1, 1916. Persons wishing to apply for this position should write to the Pennsylvania State Board of Examiners for Registration for Nurses.

New Officers.—At the meeting January 5 the following officers were chosen for the College of Physicians of Philadelphia: president, Dr. Richard H. Harte: vice president, Dr. William J. Taylor; secretary, Dr. Francis R. Packard; treasurer, Dr. John B. Roberts, and honorary librarian, Dr. Frederick P. Henry.

Popular Courses. — The Women's Medical College announces the following popular courses, open to women: "Health Problems of Everyday Life." Twelve lectures deal-

ing with such subjects as personal health, food, and care of children. Wednesdays at 4 p. m., beginning January 12. "First Aid." Twelve lectures and demonstrations, Mondays at 4 p. m., beginning January 10.

Rush Society Lecture.—The thirteenth Rush Society lecture will be delivered at the College of Physicians and Surgeons, Twenty-Second and Chestnut streets, January 21, at 8:30 p. m., by Dr. Frederick M. Allen of the Rockefeller Institute for Medical Research on "Investigative and Scientific Phases of the Diabetic Question with Their Probable Relations to Practicable Problems of Clinical Medicine."

Department Physicians Selected.—January 7, Dr. Wilmer Krusen, the new director of health and charities, confirmed the appointments of physicians in the department, made by his predecessor, Dr. S. Lewis Ziegler. These consisted of Dr. William P. Hearn as visiting chief on the surgical staff of the Philadelphia General Hospital, and Dr. Robert Goodman, Dr. Jacob E. Ellinger and Dr. Maximilian E. Smukler, assistant school medical inspectors.

Thanks for Donation of Instruments.—The roster of the County Medical Society contains a notice of thanks from the committee for the collection of surgical instruments for the small French hospitals which has met with such generosity on the part of the profession in Philadelphia and the surrounding states. The committee, through its spokesmen, Drs. Joseph Leidy, William W. Keen and J. William White, will be glad to receive further contributions, being in constant touch with these hospitals where the demand still greatly exceeds the supply.

Personal.—Dr. Edward B. Gleason was sworn in as president of Common Council of the city on January 3.—— Dr. Charles B. Penrose, who has been ill with pneumonia at the Johns Hopkins Hospital, Baltimore, returned to his home January 5.——Dr. Santos Fernandos, Havana, president of the Academy of Science of Cuba, addressed the Ophthalmic Society of the Wills Eye Hospital, January 4. ——Dr. Richard H. Harte, former director of health and charities, sailed from New York, January 8, his destination being the American Ambulance Hospital at Paris, where he will serve until April at least.——A tablet has been placed in the Church of St. Luke and the Epiphany in memory of Dr. Charles Lester Leonard, among the first men in this city to experiment with Roentgen rays, and an early victim.

WEST VIRGINIA

West Virginia Medical Journal Adopts New Policy.—The *West Virginia Medical Journal*, the official organ of the West Virginia State Medical Association, with the issue of January, 1916, comes under the management of a new editor who states that "there are some changes in the policy of our journal which it has now become necessary to make. No advertisements of pharmaceutical products should be printed which do not conform to the standards of the Council on Pharmacy and Chemistry of the American Medical Association. In order to adopt this standard and bring the *West Virginia Medical Journal* into harmony with the journals of other state medical associations (with one exception, we believe) we have entered into an agreement with the Cooperative Medical Advertising Bureau which is conducted under the auspices of the American Medical Association at Chicago, to advertise only those products which are approved by the Council. To do this, it has been necessary to cancel quite a number of contracts, which have been excellent paying ones. However, it is the determination of your editor, during his term of service to the state association, to 'hew strictly to the line' in advertising policy."

CANADA

Local Examiners for Recruits.—Instructions have been sent to all recruiting centers in Canada from the militia department at Ottawa that the services of local doctors be secured to examine recruits instead of depending on the services of one doctor for a whole recruiting district. These doctors will be appointed on the recommendation of the minister of militia.

Medical Pension Board in Montreal District.—Announcement is made of the appointment of a medical board for the fourth military district. Dr. J. Alexander Hutchinson, Montreal, has been appointed chairman of the board. He will have the temporary rank of lieutenant-colonel. His associates will be Maj. G. F. Shaw, St. Andrews, Que., and Dr. Edmond M. von Eberts, Montreal.

Free Serum.—The Ontario Board of Health announces that on and after February 1, the public will be supplied free of charge through local boards of health and medical officers of health with various biologic products. Hospitals and physicians will be supplied direct only when they cannot obtain the serums from the local officers of health. Physicians are requested to cooperate by early reporting of all cases of communicable diseases.

Health Administration of Toronto.—Ten years ago the city of Toronto spent $60,000 annually on its health administration. Last year it spent over $309,000, but the medical officer of health has always given good value for the money and contends that a municipality can have just as much health as it is willing to pay for. Toronto spends annually as well about $75,000 on the medical inspection of public schoolchildren. It has long been considered that there has been overlapping in the matter of inspection in regard to infectious and contagious diseases. The latter is not under the department of health but is controlled by the board of education. Toronto's municipal expert considers that much money could be saved the taxpayer if the medical inspection of schools was placed under the department of health. The city has had a considerable epidemic of measles, there having been 2,000 to 3,000 cases. Some people are asking what is medical inspection for, if there is to occur an epidemic of such widespread distribution and extent?

GENERAL

Interstate Society Organized.—The physicians of Snake River Valley have organized a medical society to be known as the Idaho-Oregon Medical Society. Dr. Rollo O. Payne was elected president, and Dr. William J. Weese, secretary, both of Ontario, Ore.

Guarding Against Typhus.—Surgeon-General Rupert Blue, U. S. P. H. S., is taking great precautions against the introduction of typhus fever through the Mexican boarder. Senior Surg. Claude C. Pierce has been ordered from San Francisco to Laredo, Tex., where a quarantine against typhus has been established.

Decrease in Medical Books.—The annual report of the committee on library of the New York Academy of Medicine, issued January 1, shows a great decrease in the average of medical books published in Europe during 1915. During 1913 the academy received 704 French and German publications but during 1915 only 435.

Western Surgeons Meet.—At the annual meeting of the Western Surgical Association at Davenport, Ia., Dr. Lawrence W. Littig, Davenport, Ia., was elected president; Drs. Arnold Schwyzer, St. Paul, and Henry H. Sherk, Pasadena, Calif., were made vice presidents; and Dr. Arthur T. Mann, Minneapolis, was elected secretary-treasurer.

Rabies in the West.—Representatives of the California Board of Health, the United States Forest Service in Oregon, Nevada and California, the United States Biological Survey, the governor of Nevada, the secretaries of the State Board of Health of Oregon and Nevada, and cattlemen of Oregon, Nevada and California, met in San Francisco, December 20, to discuss plans to stamp out rabies in the coast states.

Honor to Botanist.—Dr. T. J. Burrill, professor emeritus of botany at the University of Illinois, Champaign-Urbana, was installed as president of the American Society of Bacteriology at the closing session of the convention, December 23. Dr. Burrill was also further honored in resolutions congratulating him on his pear-blight investigations which have resulted in the creation of plant pathology as a science.

Memorial to Trudeau.—Announcement has been made of a fund established by Samuel Mather of Cleveland to found a school for the graduate study of tuberculosis as a memorial to the late Dr. Edward L. Trudeau. The school will probably be located at Saranac Lake, N. Y., and courses will be offered to physicians who wish to become proficient in the diagnosis of tuberculosis. Cooperating agencies for special study will also be established in New York City.

Society Awards Prizes.—The Tri-State Medical Society of Arkansas-Louisiana-Texas has awarded the gold medals for the three best papers on original research work presented to the society, as follows: first prize, Dr. Thomas E. Wright, Monroe, La.; second prize, Dr. Herbert L. McNeil, Galveston, Texas, and third prize, Dr. Truman C. Terrell, Fort Worth, Texas. The society has voted to renew its offer for the next meeting which will take place at Texarkana in December, 1916.

The de Roaldes Prize.—The American Laryngological Association announces that the de Roaldes prize, a gold medal, valued at $100, the object of which is to encourage the advancement of the sciences of laryngology and rhinol-

ogy, is now open for competition to practitioners in regular standing in the United States and Canada, not members of the American Laryngological Association. Essays must be typewritten, the customary means being taken to prevent disclosure of the author's name. They must be placed in the hands of the secretary of the association, Dr. Harmon Smith, 44 West Forty-Ninth Street, New York, prior to April 20, 1916.

Bequests and Donations.—The following bequests and donations have recently been announced:

New York Infirmary for Women and Children, $6,000; American Social Hygiene Association, $5,000, by the will of Miss Grace Hoadley Dodge of New York City.

Chautauqua County, (N. Y.) Tuberculosis Sanatorium, $150,000, for construction and equipment, by the will of Mrs. Elizabeth M. Newton.

Boehne Antituberculosis Camp near Evansville, Ind., $1,000, by the will of Mrs. Mary Stockwell.

Grinnell College, Grinnell, Ia., a donation of $150,000, by Dr. LeRoy Dibble, Kansas City, Mo.

Fund for the relief of destitute Polish in the war zone, a donation of $1,000 by J. A. Patten of Evanston, Ill.

Various Red Cross services abroad, a donation of $1,000 by Mr. Robert Allerton of Chicago.

United Hebrew Charities and Mt. Sinai Hospital, New York City, each $1,000, by the will of Isaac Metzger.

Brooklyn Eye and Ear Hospital, $5,000; Brooklyn Hospital and Brooklyn Home for Consumptives, each $2,500, by the will of Colonel R. W. Woodward.

Congress on Medical Education, Public Health and Medical Licensure.—A congress on medical education, public health and medical licensure, participated in by the Councils on Medical Education, and on Health and Public Instruction of the American Medical Association, the Federation of State Medical Boards of the United States and the Association of American Medical Colleges, will be held at the Congress Hotel, Chicago, Feb. 7 and 8, 1916.

On Monday, February 7, the Council on Medical Education will hold its twelfth annual conference. The conference will open at 9 o'clock with an address by the chairman, Dr. Arthur Dean Bevan, followed by a report from the secretary, Dr. N. P. Colwell. The balance of the morning will be devoted to a symposium on "Relation of the Laboratory Courses to the Work of the Clinical Years." The speakers in this symposium will be Dr. E. P. Lyon, dean of the University of Minnesota Medical School; Dr. L. F. Barker, professor of clinical medicine, Johns Hopkins University Medical School; Dr. James Ewing, professor of pathology, Cornell University Medical College, and Dr. Charles H. Frazier, professor of surgery, University of Pennsylvania, School of Medicine.

In the afternoon there will be a joint conference between the Federation of State Medical Boards and the Council on Medical Education. The entire afternoon will be taken up with a symposium on "The National Board of Medical Examiners." The speakers will be Dr. W. L. Rodman, President of the American Medical Association; Surgeon-General W. C. Gorgas, W. C. Braisted and Rupert Blue, respectively, of the United States Army, Navy and Public Health Service; Dr. Herbert Harlan, president of the Maryland State Board of Medical Examiners; Dr. Victor C. Vaughan, dean of the University of Michigan Medical School, and Dr. Isadore Dyer, dean of the Tulane University of Louisiana, School of Medicine.

On Monday evening, at 8 o'clock, the Federation of State Medical Boards of the United States will hold a conference. The program will consist of an address by the president, Dr. Charles H. Cook of the Massachusetts Board of Registration in Medicine; a Report on Uniform Preliminary Requirements, by Dr. Beverly D. Harison, secretary of the Michigan State Board of Registration in Medicine; a paper on "What the Federation Could Accomplish," by Dr. Otto V. Huffman, secretary of the Long Island College Hospital; another on "The Regulation of Drugless Practitioners," by Dr. George H. Matson, secretary of the Ohio State Medical Board; and a third on "Standardization of Hospitals," by Dr. John M. Baldy, president of the Pennsylvania Bureau of Medical Education and Licensure.

On Tuesday, February 8, the Council on Health and Public Instruction of the American Medical Association will hold its annual conference. At the morning session, Prof. Irby Hudson of Nashville, Tenn., secretary of the board of preliminary examination, will present a paper on the results of this plan. The remainder of the forenoon will be devoted to a symposium on "A Model Medical Practice Act." The speakers will be Dr. Horace D. Arnold of Boston, representing the Council on Medical Education; Dr. Walter L. Bierring of Iowa City, Iowa, secretary of the Federation of State Medical Boards of the United States; Dr. W. J. Meanes of Columbus, Ohio, representing the Association of American Medical Colleges; Dr. Royal D. Copeland of New York City, representing the homeopathic school; Dr. John K. Scudder of Cincinnati, representing the eclectic school; and Hon. Thomas S. Hogan of Chicago, attorney for the Illinois State Board of Health.

The afternoon program will be devoted to a discussion of state public health organization. Dr. Charles V. Chapin, commissioner of health of Providence, R. I., and special representative of the council, will present a paper on "State Public Health Organization," embodying the results of his recent survey of state public health work. Dr. J. W. Kerr of Washington, D. C., assistant surgeon-general of the United States Public Health Service, will discuss the "Relation Between Federal and State Public Health Organization." These papers will be discussed by Dr. H. M. Bracken of St. Paul, secretary of the Minnesota State Board of Health; Dr. A. G. Young, Augusta, Maine, secretary of the Maine State Board of Health and president of the conference of state and provincial boards of health; Dr. Samuel G. Dixon of Harrisburg, Pa., commissioner State Department of Health; Dr. W. S. Leathers of University, Miss., state director of public health; Dr. John A. Ferrell of New York City, assistant director of the Rockefeller International Health Commission; Dr. S. J. Crumbine of Topeka, Kan., secretary of the State Board of Health of Kansas, and Dr. J. N. Hurty of Indianapolis, secretary of the State Board of Health of Indiana.

On Tuesday afternoon, beginning at 2 o'clock, there will be a joint meeting of the Association of American Medical Colleges and the Federation of State Medical Boards, which will be held in the south parlor of the Auditorium Hotel. The program is as follows: "Teaching of Preventive Medicine," Dr. M. P. Ravenel, professor of medical bacteriology and preventive medicine, University of Missouri, School of Medicine; "The Teaching of Applied Therapeutics," Dr. Francis H. McCrudden, assistant professor of applied therapeutics, Tufts College Medical School; "Clinical Teaching of Medicine," Dr. Frank Billings, professor of medicine, Rush Medical College; and "Clinical Teaching of Surgery," Dr. A. C. Stokes, associate professor of clinical and experimental surgery, University of Nebraska, College of Medicine.

In the evening, Dr. Cressy L. Wilbur, special agent of the Federal Bureau of the Census, will give an illustrated lecture on "The Doctor and Vital Statistics."

These annual conferences have elicited an increased interest since they were begun by the Council on Medical Education in 1905. A large attendance this year is anticipated.

FOREIGN

Havana Flyless.—In *Current Reports*, Special Agent Garard Harris states that the fly or mosquito is a real rarity in Havana and that screens are not necessary and the absence of these pests is simply the result of municipal cleanliness and care.

Typhus in Mexico.—Telegrams to the Mexican consulate in El Paso, Texas, state that official records in Mexico City and suburbs show 3,241 typhus cases in December with total deaths in the city proper of 305. In November the total number of cases was 2,199 with 400 deaths.

Gift from American Surgeon to Medical Assembly Building at Berlin.—According to the *Allgemeine med. Central-Zeitung*, Dec. 4, 1915, Professor Halsted of the chair of surgery of the University of Baltimore has donated 2,000 marks (about $500) through Professor Kocher of Bern to the Langenbeck-Virchow Haus at Berlin.

Deaths in the Profession Abroad.—A. Ceccherelli, one of the leading surgeons of Italy, chief of the surgical clinic of the University of Parma, professor of surgery since 1883, and frequently a delegate from Italy to international scientific gatherings, succumbed recently to a lingering illness.——L. Makara, professor of surgery at the University of Klausenburg, Hungary, aged 53.

Foundation of Pediatric Society at Madrid.—The president of the newly organized society is Dr. B. G. Alvarez, on the editorial staff of the *Pediatria Española*. In his opening address he called attention to some of the most pressing problems in pediatrics, and announced the foundation of a prize to be awarded for the best work, based on original research, on the hemorrhagic diathesis.

WAR NOTES

Cholera in Austria.—The *Wiener klinische Wochenschrift* states that in Galicia and Bukowina there were 6,840 cases of cholera reported in September, with 4,346 deaths. There

were also 1,803 cases of smallpox during the same period. Only 35 cases of smallpox were reported elsewhere in the empire.

Toronto University Men in Active Service.—President Falconer of the University of Toronto addressed the student body last week. He stated that thirty-one undergraduates had left the previous week to take commissions with the imperial army. There are now about 1,700 varsity men on active service. Of the university staff, seventy-three are serving as officers and eight are in the ranks. Graduates numbering 746 are officers and 171 hold other ranks. There are 284 undergraduates serving as officers and 381 in the ranks.

Summary Repression of Publications Denouncing Vaccination, Etc.—Our German exchanges state that in a number of army corps regulations have recently been adopted prohibiting the printing, the issuing and the distribution of circulars in which the efforts of scientific medicine or the medical measures enforced by the authorities are belittled or denounced. The penalty may be up to a year's imprisonment. The regulations at first applied merely to antivaccination propaganda, but recently a general order has been issued prohibiting any propaganda by circulars against the medical measures endorsed by the state.

Scarcity of Clinical Thermometers in France.—At a recent meeting of a Paris medical society, Netter reported that vulvovaginitis had not been encountered for many years in his scarlet fever service but that now it was prevailing, and he had traced the epidemic to the use of thermometers in common. There are too few thermometers on hand for individual use, as is the custom. He related that before the war all the thermometers had been imported from Germany. At present they are being obtained from America, but the American thermometers are considerably more expensive and more fragile. He urged the authorities to take steps to put an end to this *pénurie de thermomètres* as the army as well as the civilian population is suffering from it. French manufacturers are ready to undertake to make them if they can get hold of some skilled workmen.

Personal.—Maj. H. H. Alger, Stirling, Ont., medical officer to the Eightieth Battalion, has been promoted to be lieutenant-colonel.——Dr. Herbert G. Murray, Owen Sound, Ont., medical health officer, has been appointed to the Canadian Army Medical Corps to be attached to Queen's University Hospital, with the rank of captain. He reports at Kingston at once and will sail for Cairo, Egypt, in the near future.——Lieut.-Col. James C. Connell, dean of the medical department of Queen's University, Kingston, Ont., has been overwhelmed with applications for places in the reinforcements to be sent to their base hospital at Cairo. The reinforcements are necessitated by the fact that the hospital has been increased to one of 1,040 beds. Dr. Albert P. Chown, Kingston, has applied and will be given the rank of captain and will become the druggist of the hospital.——Dr. George Hanley, medical officer for Fort Henry Detention Camp at Kingston, Ont., has been given a commission in the R. A. M. C. and will leave for England immediately.——Dr. R. W. Bruce Smith, Toronto, inspector of hospitals and public institutions in Ontario, has been confined to his house by illness for several months.——Dr. J. Ernest Carmichael, Collingwood, Ont., has been appointed to the Canadian Army Medical Corps with the rank of captain. He will be attached to Queen's University Base Hospital now at Cairo, Egypt.——Dr. Ferguson, Smith's Falls, Ont., has arrived in Kingston, Ont., to take commission as captain with Queen's reinforcements for their base hospital in Cairo.

PARIS LETTER

PARIS, Dec. 16, 1915.

The War

LOCALIZED TETANUS

In a previous letter (THE JOURNAL, Dec. 11, 1915, p. 2102) I mentioned a report by Professor Pozzi of a case of localized tetanus. Dr. Routier, surgeon of the hospitals of Paris, has just called the attention of the Académie de médecine to this particular form of tetanus. Routier declares that, in spite of preventive injections of antitoxin, tetanus may manifest itself within a few days after the wound or still later; the nature of the wound may furnish no indication by which it would be possible to foresee the outbreak. The attention of the surgeon, however, may be attracted by the sudden outbreak of violent pain in a limb, which may not be near the wound. In such cases contracture soon follows, accompanied by reflexes and epileptoid trembling. This form of tetanus is as serious as the classic generalized tetanus. The temperature is not so high, however. Routier isolates the patient and gives chloral in doses of 10 gm. per day and three subcutaneous injections every twenty-four hours of a saline solution composed of sodium persulphate and calcium phosphate containing enough phosphoric acid to render the mixture soluble in ten parts of water. These injections are painful. To diminish the pain, Routier combines them with injections of morphin.

Dr. C. Monod, honorary surgeon of the hospitals of Paris, reported the case of a patient with localized tetanus who was treated successfully by heavy doses of chloral and intraspinal injections of magnesium sulphate, the calming effects of which were remarkable. Dr. Vaillard, medical inspector-general of the military medical service reported two cases of delayed and localized tetanus.

Dr. Brachet, naval physician at Rochefort, reported the case of a man who was attacked with localized tetanus ninety-seven days after his wound.

ARTICULAR STIFFNESS AND ANKYLOSIS AFTER WOUNDS BY FIREARMS

Dr. Delorme, medical inspector-general of the military medical service, presented before the Académie de médecine a paper on this subject, which was especially interesting because it reported a large number of cases of stiff joint or ankylosis. There unfortunate results will seriously affect the future of the patients. The ordinary causes are too prolonged immobilization, neglect or insufficient oversight of articular gymnastics and the use of exercise to the neglect of other measures. According to Delorme, exercise is too exclusively employed in these cases of stiffness and ankylosis; its use is too much delayed and the methods are not adapted to the circumstances and conditions. Delorme believes that in a large number of cases orthopedic surgery should be used instead. The characteristics of the method used by Delorme are that, immediately after operation for the ankylosis, he systematically employs energetic compression of the joint by wadding alternately with mobilization. This method has given him the best of results. In hundreds of cases of ankylosis treated without result by other methods, he has obtained a cure.

UNATTACHED NURSES

Recently various periodicals have published a statement that M. Justin Godart, assistant secretary of the war department for the military medical service, intends to license the nurses of the three societies of the Red Cross (Société de Secours aux Blessés Militaires, Association des Dames Françaises, Union des Femmes de France). This report is not true. A certain number of male nurses having been called into the army service, M. Godart has been endeavoring to utilize to the best advantage the services of the unattached female nurses—the women, numbering several thousand, who, although not belonging to any society, wish to aid in the care of sick or wounded soldiers, and who have offered their services directly to the war department. Many of these women nurses have been in service for many months in the hospitals of the interior. It has been thought, however, that they might be employed nearer the front. About fifty of those chosen among the best are now at Marseilles about to join the army in the east. Others will be sent nearer the front.

THE CROSS OF WAR AND THE MEDICAL STAFF

A few months ago a special decoration was created called the Cross of War. It is intended for the soldiers who have been mentioned for gallantry. Complaints have been made of abuses of this decoration, which has sometimes been awarded to persons who have remained in the interior of the country.

A CANADIAN HOSPITAL FOR FRENCH SOLDIERS

The French Canadians, desiring to show their affection for the country of their origin, have requested that one of the hospitals founded by them be placed at the disposition of France for the care of French soldiers. Mr. Robert Borden, prime minister of Canada, has accordingly directed General Jones, director of the Canadian medical service, to place Stationary Hospital No. 4 at the service of France. This hospital is at present located at the hippodrome of St. Cloud. It is composed of 14 double-walled buildings and 110 tents, and also occupies the buildings of the racing society. Six hundred patients can be cared for there. All the staff belongs

to the British army and is composed solely of French Canadians. There are 15 physicians and 168 nurses, and other subordinates. The hospital, which will probably open its doors during January, has been placed at the disposal of the medical service exclusively for French patients.

LONDON LETTER

LONDON, Dec. 20, 1915.

The War

THE SUPPLY OF ARMY SURGEONS

The number of army surgeons amounts to about 10,000, of whom three fifths hold temporary commissions. Thus, about a third of the whole profession in the United Kingdom is engaged in war service. In addition, the colonies are employing with their armies about a fifth of their physicians. But there is still a demand for more. In this country the Central Medical War Committee (an organization formed by the profession and recognized by the government) is organizing the profession so as to enable every fit physician to serve the country in such a manner as to turn his qualification to the best possible use and to deal with all matters affecting the profession arising in connection with the war. The committee has conferred with various government departments, and particularly with the national health insurance commissioners (who are now responsible for the treatment of the greater part of the industrial population) in order that recruiting may be carried out with careful regard to the needs of every locality. Taking the country generally, there is an ample supply of physicians of military age to meet any demands that seem likely to be made. But these men are unequally distributed; some are in areas never too well supplied with physicians at any time, so that the withdrawal of comparatively few might cause serious difficulties. Some are in areas in which the proportion of physicians to the population is such that a large number could be spared with comparatively little inconvenience to the community. The task before the Central Medical War Committee is so to adjust the demands in each area as to convince both physicians and the general public that these demands are equitable. If the supply of physicians is found weak in any particular area, a warning is given not to recruit in that one. In the big cities and towns there are many physicians willing to go to the front, but they have contracted liabilities, such as the rent of an expensive house, or the unpaid part of the purchase money of a practice. They are faced with the considerable falling off of patients when they return. Suggestions have been put forward to facilitate their joining the army. Those who practice at watering places could often leave their practices for six months with little loss. On the other hand, in urban districts the need for physicians is often reduced in the summer. In some cases two men are willing to take service turn about, one doing the home work while the other is away, but the War Office has not yet seen its way to accept such offers of joint service. Another suggestion is for multiple war partnership. Several men, say six neighbors, might unite for the duration of the war and for five years after. Two or three could be released for war service while the others worked the practice. The military pay could be paid into the general account, and the whole divided in an agreed proportion. This plan has the advantage of securing to each man the good will of his practice, because for the five years after the war he would have ample opportunity to regain any that he had lost. A third system is for physicians gone on war service to leave behind a list of their patients who will be attended by neighboring practitioners on their behalf and restored on their return, all fees to be divided equally with the absentee. A fourth system is the establishment of a central clinic; but this would be suitable only for insurance and other patients of the industrial classes.

RELIEF WORK BY ENGLISH QUAKERS IN FRANCE

Their religious principles prevent Quakers fighting in war (although the circumstances of the present war have caused some of them to waive their objections). Whether because of their well-known philanthropy or because they think that abstention from war specially imposed on them duties in connection with it, they have always organized relief for the victims. In the Franco-German War of 1870 they did a great deal in many ways, including help in the rebuilding of destroyed homes. In the present war they have formed a War Victims' Relief Committee, of which the work in France is of four kinds—medical, building, relief and agriculture. On the medical staff there are two doctors, eight fully trained nurses, nine partly trained nurses and midwives, and two assistants, who are engaged at five centers of work: at Châlons-sur-Marne and Sermaize, they are doing hospital work; at Bettaincourt a fine chateau has been lent and a convalescent home established for fifty children; in the devastated villages in the departments of Marne and Meuse and at Bar-le-Duc, medical and district nursing are being done. At Châlons the number of maternity patients had lessened very much since March, and an average of only ten babies had been born each month. A small ward containing eight cots has been devoted to the care of sick babies, and has proved an invaluable adjunct to the work of the Châlons Civil Hospital, which has been overfull. Their work has received the warmest encomiums from the French authorities and the French people.

THE PROBLEM OF INDUSTRIAL FATIGUE AMONG MUNITION WORKERS

The war has created a demand for munitions out of all proportion to anything contemplated previously in this country. Overtime on a large scale and even Sunday labor became the rule, and soon statements were made that the health of the workers was being injured by the long hours. The government therefore appointed a committee of physicians, physiologists, officials and others to consider and advise on questions of industrial fatigue, hours of labor and other matters affecting the health and physical efficiency of munition workers. A report has been published on Sunday labor and industrial canteens, and a report is in preparation on such subjects as welfare supervision, hours of labor, the employment of women, sickness and accidents. With regard to Sunday labor, the committee has come to the conclusion that it should be everywhere discontinued except for the tending of furnaces and other work which must be continuous. Except for quite short periods, continuous work is, in their opinion, a profound mistake, not only on social and religious grounds, but also economically, as the output is not increased. This is so not only because men become bored and wearied with monotony of the work, but also because over a large period the actual number of hours worked is found to be greater when the regulation weekly hours are reduced. Thus, in one case the regulation hours were reduced from 78½ to 65½ per week, yet the average number actually worked during the three months succeeding the change was 60 per week, while the average in the preceding six months was 59¼. The committee also thinks that the foremen and even the higher management require definite periods of rest even more than the manual workers.

On the subject of food the committee considers that industrial alcoholism is partly due to the lack of cheap good food. The provision of dining rooms near the factory and industrial canteens has been found to be a great improvement on going home for meals. After their establishment a reduction in sickness, less absence and broken time, less tendency to alcoholism, and increased efficiency in output were observed.

Marriages

CONSTANTINE GEORGE PSAKI, M.D., New York City, to Miss Frances de Chantal Vogel of Jersey City, N. J., in New York City, recently.

HARRY GRIFFITH HIRSCHLE, M.D., to Miss Leota L. Harless, both of Canton, Ill., in Chicago, December 18.

SESSLER HOSS, M.D., Muskogee, Okla., to Miss Irene Morrow of Nashville, Tenn., December 25.

EDWARD JOSEPH BUXBAUM, M.D., Jamaica, N. Y., to Miss Theresa Gross of Brooklyn, December 23.

HERBERT JOHN SCHMOYER, M.D., Bethlehem, Pa., to Mrs. Bessie M. Mitchell, at Allentown, Pa., November 5.

THEODORE EVELYN TOWNSEND, M.D., to Mrs. Ethel D. Naylor, both of Westwood, N. J., December 24.

CHARLES MCVEA BUCKNER, M.D., Huntington, W. Va., to Mrs. Dorothy Brinton of Philadelphia.

LAFE HELMUTH FRITZ, M.D., Dubuque, Iowa, to Miss Janet McElroy of Pittsburgh, December 29.

LUTHER A. REXFORD, M.D., to Mrs. Pearl David, both of Minneapolis, December 22.

MILES JOHN BREUER, M.D., to Miss Julia E. Strejo, both of Lincoln, Neb., January 4.

Deaths

George Thomas Jackson, M.D. College of Physicians and Surgeons in the City of New York, 1878; aged 63; a Fellow of the American Medical Association and one of the most noted dermatologists of the United States; died at his home in New York City, January 3, from pneumonia; Dr. Jackson was born in New York City, Dec. 19, 1852, and after his graduation in medicine spent two years in post-graduate study in Berlin, Vienna and Strassburg. On his return he was in general practice in New York until 1884, after that time devoting himself entirely to his chosen specialty of dermatology. In 1890 he was appointed professor of dermatology at the Women's Medical College and New York Infirmary; in 1895 he accepted a similar position in the University of Vermont, Burlington, returning to New York two years later to become instructor in dermatology in his alma mater, and in 1905 he was made professor of dermatology. He was consulting dermatologist to the Presbyterian Hospital and New York Infirmary for Women and Children; the author of works on "Diseases of the Hair and Scalp" and "The Ready Reference Handbook of Dermatology." He was a Fellow of the American Medical Association, once president of the American Dermatological Association and the New York Dermatological Society and was honorary librarian of the New York Academy of Medicine.

Charles Clifford Barrows, M.D. University of Virginia, Charlottesville, 1879; New York University, New York City, 1880; aged 58; a Fellow of the American Medical Association and American College of Surgeons; once president of the Bellevue Hospital Alumni Association and New York Clinical Society; from 1882 to 1887 acting assistant surgeon, U. S. Army, and thereafter a practitioner of New York City; assistant professor of clinical surgery in Cornell University Medical Department; a member of the New York Obstetrical Society and New York Academy of Medicine; surgeon to the Manhattan Maternity Hospital; assistant gynecologist to Bellevue Hospital and consulting surgeon to the New Rochelle and Peekskill hospitals; died at his home in New York City, January 2, from pneumonia.

James Clarke White, M.D. Harvard Medical School, 1856; aged 82; a prominent dermatologist of Boston; a member of the Massachusetts Medical Society, American Academy of Arts and Sciences and many foreign scientific organizations; first president of the American Dermatological Society in 1902 and 1903 and president of the International Dermatological Association; died at his home in Boston, January 6. Dr. White was a native of Belfast, Me., studied for a year in Vienna after his graduation in medicine and then began practice in Boston. He became lecturer on chemistry in Harvard Medical School in 1863, was made adjunct professor of chemistry in 1866, instructor in medical chemistry in 1871, and was professor of dermatology from 1871 until 1902 when he became professor emeritus.

Isaac Ott, M.D. University of Pennsylvania, Philadelphia, 1869; aged 68; a Fellow of the American Medical Association; fellow in biology in Johns Hopkins University in 1879; lecturer on physiology in the University of Pennsylvania in 1878; professor of physiology in 1884 and dean in 1895 and 1896 of the Medico-Chirurgical College of Philadelphia; a member and formerly president of the American Neurological Association; chairman of the physiologic section of the Pan-American Congress; consulting neurologist to the State Hospital, Norristown, Pa.; author of a number of monographs on diseases of the nervous system, the last of which, a work on "Internal Secretions," was published in 1910; died at his home in Easton, Pa., January 1, from pneumonia.

William B. Graham, M.D. Rush Medical College, 1861; aged 80; a member of the Indiana State Medical Association and said to have been the oldest practitioner of Hamilton County, Ind.; surgeon of the One Hundred and First Indiana Infantry, U. S. V., during the Civil War and for three months a prisoner in Libby Prison, Richmond, Va.; who, on the occasion of his semicentenary of practice in 1911, was the guest of honor of the Hamilton County Medical Society and was presented with a gold-headed cane; for thirty-five years local surgeon at Noblesville, Ind., for the Lake Erie and Western Road, and for several terms secretary of the board of health of Noblesville; died at his home in that city, December 29.

Robert Stormont Anderson, M.D. Kentucky School of Medicine, Louisville, 1884; aged 54; a Fellow of the American Medical Association and president of the Gibson County (Ind.) Medical Society; for many years a practitioner of Princeton, Ind., and health officer of Princeton and Gibson County; local surgeon to the Southern, and Chicago and Eastern Indiana systems; for several years a member of the board of education of Princeton; died at his home, December 23, from appendicitis. At a meeting of the Gibson County Medical Society, December 23, a committee was appointed to draft suitable resolutions regarding the death of Dr. Anderson.

Charles Heady Beard, M.D. University of Louisville, Ky., 1887; aged 60; a Fellow of the American Medical Association and American College of Surgeons; a member of the Mississippi Valley Medical Association, Chicago Ophthalmological Society of which he was once president, American Ophthalmological Society and Physicians' Club of Chicago; chief surgeon of the Illinois Charitable Eye and Ear Infirmary and head of the ophthalmologic staff of the Passavant Memorial Hospital; for more than thirty years a specialist on diseases of the eye and ear; died at his home in Chicago, January 3, from carcinoma of the stomach.

Granville T. Collins, M.D. Medical College of Virginia, Richmond, 1894; aged 57; a Fellow of the American Medical Association and Richmond Academy of Medicine and Surgery; a well-known practitioner of Highland Springs, Va.; who was injured, December 25, in a collision between his automobile and a passenger train of the Chesapeake and Ohio Railway at Laundry Crossing; died in St. Luke's Hospital, Richmond, December 26. The Richmond Academy of Medicine and Surgery held a special meeting, December 27, to take suitable action and draw up resolutions of sympathy for the bereaved family.

William J. Ashenfelter, M.D. University of Pennsylvania, Philadelphia, 1870; a member of the Medical Society of the State of Pennsylvania and of the Association of Military Surgeons of the United States; formerly surgeon of the Sixth Infantry, Pa. N. G., and also brigade surgeon; major surgeon of the Sixth Pennsylvania Volunteer Infantry, during the Spanish-American War; for many years chief of staff of the Pottstown, Pa., Hospital; a well-known and beloved practitioner of Pottstown; died at his home in that city, Jan. 1.

Charles Townshend Dade, M.D. College of Physicians and Surgeons in the City of New York, 1891; aged 56; a Fellow of the New York Academy of Medicine and a member of the New York Dermatological Society; consulting dermatologist to Roosevelt Central Islip, Englewood and Vassar Brothers hospitals; chief of the dermatologic clinic of St. Luke's Hospital, New York City; and for many years connected with the Vanderbilt Clinic; died at his home in New York City, December 26.

William W. Blair, M.D. Medical College of Ohio, Cincinnati, 1850; aged 88; a member of the Indiana State Medical Association and one of the oldest practitioners of the state; who was the guest of honor of the Gibson County Medical Society in 1910 on the occasion of the sixtieth anniversary of his entrance into the practice of medicine; surgeon of United States Volunteers for four years during the Civil War; died at his home in Princeton, Ind., January 2.

Rose Talbott Bullard, M.D. Northwestern University Woman's Medical School, Chicago, 1886; aged 51; a Fellow of the American Medical Association and formerly president of the Los Angeles County Medical Association; secretary of the Los Angeles Antituberculosis League, and one of the most prominent woman surgeons and gynecologists of the Pacific Coast; died in California Hospital, Los Angeles, December 22, a week after an operation for peritonitis.

Edgar Reeve Bryant, M.D. Hahnemann Medical College, Philadelphia, 1889; aged 49; professor of surgery, registrar and a member of the board of directors of the Hahnemann Medical College of the Pacific, San Francisco; surgeon to the San Francisco City and County Hospital; died in Lane Hospital, San Francisco, December 30, from injuries received in a fall through a skylight in the California Building of the Panama-Pacific Exposition, December 4.

Josiah Lee McComas, M.D. University of Maryland, Baltimore, 1858; aged 80; acting assistant surgeon, United States Army, throughout the Civil War; a founder and vice president of the Pan-American Medical Congress; health officer of Garrett County, Md., and local surgeon at Oakland for the Baltimore and Ohio System for many years; died at the home of his son in Oakland, Md., December 20.

Fenner H. Peckham, M.D. Yale University, New Haven, Conn., 1866; aged 71; a member of the Rhode Island Medical Society; for many years active as a practitioner and banker

of Providence, R. I.; president of the Providence Public Park Association and chairman of the Metropolitan Park Commission of Rhode Island since 1905; died at his home in Providence, December 26, from heart disease.

Charles H. Emmerling, M.D. University of Jena, Germany, 1857; aged 82; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; for more than half a century a prominent practitioner of Pittsburgh and a member of the medical staffs of the Passavant, Pittsburgh and West Penn hospitals; died at his home in Pittsburgh, December 27.

George Suttie, M.D. Detroit College of Medicine and Surgery, 1893; aged 63; assistant to the chair of ophthalmology and otology and professor of botany in the department of pharmacy of his alma mater; lecturer on chemistry in the Detroit Technical Institute; a specialist on diseases of the eye and ear; died in Harper Hospital, Detroit, January 1, from pneumonia.

William McKinnon Goodlove, M.D. Medical College of Ohio, Cincinnati, 1872; aged 69; a veteran of the Civil War; appointed surgeon in the Bureau of Pensions, Washington, D. C., in 1885; and since that time a clerk in the Public Debt and Customs Division of the Treasury Department, Washington, D. C.; died at his home in Washington, December 26.

Henry Herbert Atkinson, M.D. Cooper Medical College, San Francisco, 1900; aged 45; a missionary of the American Board of Commissioners for Foreign Missions at Mezerek, Mamurette-ul-Aziz, and later at Harpoot, Turkey-in-Asia, where he was in charge of the Annie Tracy Riggs Memorial Hospital; died in Harpoot, January 1, from typhus fever.

John Henry Silvey, M.D. Cincinnati College of Medicine and Surgery, 1877; Bellevue Hospital Medical College, 1878; aged 70; a Fellow of the American Medical Association; formerly a druggist and practitioner of Wheeling, W. Va., but for the last three years a practitioner of Sharpsburg, Pa.; died at his home in that place, December 27.

William Clifton Drein, M.D. University of Pennsylvania, Philadelphia, 1899; aged 39; physician-in-chief to the Stetson Hospital, Philadelphia, and a member of the Philadelphia Medical Club; died in the Episcopal Hospital, Philadelphia, January 1, from disease of the lungs for which operation had been performed five days before.

Edward Beach Crowell, M.D. College of Physicians and Surgeons in the city of New York, 1853; aged 86; later a practitioner of Paris, France; and afterward a lawyer of New York City; died at his home in New Brighton, S. I., January 2, from the effects of injuries sustained a month before in a fall in a street car.

George Dallas Barrett, M.D. Dartmouth Medical School, Hanover, N. H., 1878; aged 69; formerly a member of the Medical Society of the State of New York and Massachusetts Medical Society; health officer of the town of Galen, N. Y.; died at his home in Clyde, N.Y., December 23, from uremia.

Lawrence Anderson, M.D. Tulane University, New Orleans, 1890; aged 55; a dentist of Lake Charles, La., and later a practitioner of Tulsa, Okla.; formerly a member of the Louisiana State Medical Association; died at his old home in Lake Charles, recently, from diabetes.

James Lisle, M.D. Cincinnati College of Medicine and Surgery, 1873; aged 76; from 1884 to 1888 a representative in the Ohio State Legislature from Licking County; a veteran of the Civil War; died at his home in Columbus, Ohio, December 22, from cerebral hemorrhage.

Pliny W. Blanchard, M.D. Berkshire Medical College, Pittsfield, Mass., 1854; aged 86; assistant surgeon of the Forty-Ninth Wisconsin Infantry, U. S. V., throughout the Civil War; for sixteen years health officer of Harvard, Ill.; died at his home in Harvard, December 17.

Samuel Stille, M.D. University of Pennsylvania, Philadelphia, 1875; Pennsylvania Medical College, Gettysburg, 1857; aged 86; a pioneer practitioner of Atlantic City and senator from Atlantic County, N. J., from 1863 to 1865; died at his home, December 23, from pneumonia.

Maximilian Kuznik, M.D. College of Physicians and Surgeons, Chicago, 1903; aged 36; professor of clinical diagnosis in Hering Medical College, and the Chicago College of Medicine and Surgery; died at his home in Chicago, January 4, from rheumatic endocarditis.

Roderick Fraser, M.D. Bellevue Hospital Medical College, 1897; aged 45; formerly of New York City, but for three years a resident of Saranac Lake, N. Y.; died at his home in that place, December 16, from tuberculosis.

Charles Eugene Norris, M.D. University of Michigan, Ann Arbor, 1886; aged 57; a Fellow of the American Medical Association and treasurer of the Summit County, Ohio, Medical Society for four terms; died at his home in Akron, Ohio, December 29, from pneumonia.

George W. Bennett, M.D. University of Louisville, Ky., 1882; aged 57; died at his home in Fort Sumner, N. M., December 26, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

William Ernest Montgomery, M.D. Memphis Hospital Medical College, 1900; aged 37; a member of the Mississippi State Medical Association; of Norfield, Miss.; died suddenly while returning from a professional call near Bogue Chitto, December 25, from heart disease.

Caleb M. Chalfant, M.D. Western Reserve University, Cleveland, 1857; aged 82; for nearly half a century a practitioner of Cleveland Heights; surgeon of Volunteers during the Civil War; died in the Lutheran Hospital, Cleveland, December 29, from pneumonia.

Daniel Morrison Benonia Thorn, M.D. Rush Medical College, 1874; aged 71; for forty-one years a missionary of the American Board of Commissioners for Foreign Missions in Mardin, Turkey, where he was in charge of a hospital; died in Sivas, Turkey, December 6.

Otto Stuckert, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1890; aged 53; of Whiteside, Mo.; died in the Missouri Baptist Sanitarium, St. Louis, December 20, from the effects of a self-inflicted gunshot wound of the head.

Henry Laurens Metcalfe, M.D. Tulane University, New Orleans, 1878; for five years a resident of South America and thereafter a practitioner of Natchez, Miss.; died at the home of his brother in that city, December 14.

David L. Deal, M.D. Medical Department of the University of the Pacific, San Francisco, 1861; Cooper Medical College, San Francisco, 1882; aged 73; died at his home in Pacific Grove, Calif., December 16.

George B. Bristol (license, Connecticut, 1893), health officer of Middlebury, Conn.; for more than thirty years a practitioner of that place; died at his home, December 1, from cerebral hemorrhage.

Eugene W. Beebe, M.D. Hahnemann Medical College, Chicago, 1866; aged 75; of Milwaukee; a specialist on diseases of the eye and ear; died at his home, December 19, from cerebral hemorrhage.

James Allen Jones, M.D. University of Louisville, Ky., 1890; aged 48; a Fellow of the American Medical Association; of D'Hanis, Texas; was shot and killed at his home, in that place, December 17.

Alfred Victor Brailly, M.D. College of Physicians and Surgeons in the City of New York, 1875; aged 63; died at his home in the Bronx, New York City, December 22, from pneumonia.

Owen C. Morris, M.D. University of Virginia, Charlottesville, 1896; aged 52; died at his home in Iron Gate, Va., from a glioma of the brain for which operation had twice been performed.

Elliot Benjamin Smith, M.D. Bellevue Hospital Medical College, 1867; aged 80; for nearly half a century a practitioner of Greeneville, Tenn.; died at his home, December 17.

William A. Swimley, M.D. Cincinnati College of Medicine and Surgery, 1876; aged 70; of Winchester, Va.; died at the home of his son in Staunton, Va., December 18.

Willard H. Greene, M.D. Jefferson Medical College, 1865; aged 89; a veteran of the Civil War; died at his home in Cumberland, R. I., December 21.

Cora E. Taylor, M.D. Pulte Medical College, Cincinnati, 1884; aged 62; died at her home in Chicago, December 22, from cerebral hemorrhage.

Richard H. Galphin, M.D. Medical College of Georgia, Augusta, 1884; of Beech Island, S. C.; died at a hospital in Augusta, December 15.

Samuel Omar Duncan, M.D. Rush Medical College, 1896; aged 48; died at his home in Forest, Ind., December 18, from tumor of the brain.

Frank Ellett Bell, M.D. Medical College of Virginia, Richmond, 1908; aged 31; died at his home in Wilmington, Va., December 18.

Edward S. Fowler, M.D. McGill University, Montreal, 1894; died suddenly at his home in Staples, Minn., December 18.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

SO-CALLED SECRETIN PREPARATIONS

Report of the Council on Pharmacy and Chemistry

The Council authorized the following report for publication, and voted to endorse the work of Professor Carlson discussed therein. W. A. PUCKNER, Secretary.

The Council has not accepted for inclusion in New and Nonofficial Remedies any preparations said to contain secretin or prosecretin as their active ingredient. A report giving the reasons for the rejection of one (the first of the so-called secretin preparations marketed) was published early last year;[1] an article on secretin, based on work undertaken at the request of the Council on Pharmacy and Chemistry, is now published.[2]

Lest the appearance of this detailed study of secretin, after the rejection of so-called secretin preparations, should be interpreted (as manufacturers whose products have been rejected have endeavored to interpret such action) as a case of first condemning a preparation and then getting the facts, the Council's methods, and their application in this case, may be briefly stated. The Council maintains that, when a manufacturer places a product on the market, the burden of proof is on that manufacturer to show that the properties of his product are in accordance with his claims for it. As stated in the introduction to N. N. R., "it is . . . manifestly impossible for the Council to investigate the composition of every complex pharmaceutical mixture, or to check thoroughly every therapeutic claim; it can give only an unbiased judgment on the available evidence." Acting on this principle, the Council examined the claims made for Secretogen, an alleged secretin product manufactured by the G. W. Carnrick Company. The conclusion was that these claims were in absolute conflict with the available evidence as to the action of secretin.

It is not necessary to review this subject again. It will suffice to state that the claims made for Secretogen rest on two fundamental propositions: (1) that deficiency of secretin (or, rather, of prosecretin) in the intestinal mucosa is a factor in gastro-intestinal diseases; (2) that secretin given by the mouth is absorbed and produces increased secretion of the pancreatic and intestinal juices and of the bile.

From an examination of the evidence available, including that submitted by the manufacturers, the Council concluded: "1. No evidence has been presented that the absence of secretin is a cause of gastro-intestinal disease. 2. There is no evidence that secretin in any form is physiologically active when administered by mouth." That these conclusions were justified is shown again by the review given by Carlson of the literature, much of which was also reviewed in the Council's previous report.

Since the claims of the Carnrick Company were not supported by any satisfactory evidence, no further investigation on the Council's part was necessary to warrant rejection of the product. The Council did not undertake to determine, for instance, whether or not Secretogen and similar products actually contain secretin; the determination of this point was immaterial here, in view of the conclusiveness of the evidence that secretin given by mouth has no physiologic action.

Since firms other than the G. W. Carnrick Company are manufacturing alleged secretin preparations, and since recommendations for the use of secretin preparations in gastro-intestinal diseases have even crept into textbooks, it seemed desirable to obtain further information on certain points. The Council therefore requested Prof. A. J. Carlson of the University of Chicago to check the results of previous investigators with regard to the action of secretin administered by mouth or directly into the intestine, and, in addition, to investigate the secretin content of certain alleged secretin preparations.

Carlson and his co-workers, like all previous investigators, found that secretin given by the mouth, or introduced even in enormous doses directly into the intestine, is entirely inactive. They also found that marked destruction of secretin followed contact for one minute with human gastric juice and that secretin is rapidly oxidized and rendered inert in contact with the air.

Further, they were unable to demonstrate the presence of secretin in samples of Secretogen and another supposed secretin preparation (Duodenin) bought on the open market. In the case of Secretogen there was one exception: one bottle was found which contained a little secretin, but it was necessary to administer (by intravenous injection, of course) the entire contents of the bottle (100 tablets) to obtain "a small but unmistakable secretin reaction."

In these studies the methods employed were those by which secretin was discovered. It is only by the use of such methods that the presence or absence of secretin can be determined. Apparently the manufacturers who place so-called secretin preparations on the market do not make use of these methods, by which alone even the composition of their products can be determined.

Carlson and his collaborators conclude:

"There is as yet no reliable evidence that lack of secretin is a primary or important factor in any disease. Even should this be established, secretin therapy, to be effective, must be intravenous. Secretin has not yet been prepared in sufficiently pure state to render possible intravenous injection in man without injurious effects. And even when this is attained, the very fleeting action of secretin will in all probability render secretin therapy as futile in all the diseases in which it is theoretically indicated as epinephrin therapy is in Addison's disease."

In short, secretin is as ineffective taken by mouth as it would be rubbed on the skin.

The referee recommends that the work of Professor Carlson be endorsed.

1. Secretogen, THE JOURNAL A. M. A., May 1, 1915, p. 1518.
2. Carlson, Lebensohn and Pearlmann: Has Secretin a Therapeutic Value? THE JOURNAL A. M. A., this issue, p. 178.

Correspondence

Drainage of Small Abscesses—Pneumatic Band as a Tourniquet

To the Editor:—Two little details of technic are perhaps too trivial to report, and quite likely have been used by others. I make no claim for originality beyond the fact that I have never happened to see them used elsewhere; and I have found them as satisfactory as they are simple.

Many small abscesses are hard to drain, on account of the tendency of the incision to make valvular closure. This is particularly true in the palmar and plantar regions, in which drainage in the ordinary method, in order to be effectual, may be painful. Here, I cut out a wide elliptic piece of integument, making its width vary somewhat with its thickness. I thus produce an opening which cannot possibly close until it fills up from the bottom, making drainage easy, and often unnecessary.

Since the use of a wide pneumatic band with the sphygmomanometer has become general, and I have noticed the ease and precision with which the arterial pressure may be regulated, I have used one of those bands as a tourniquet on the thigh and arm in amputations and other operations. The result is ideal. With no confusion to the external coverings, an assistant, with a light turn of the screw or a slight pressure on the bulb, can maintain just exactly enough pressure to produce hemostasis, and no more. No injury is done to the large vessels, and during ligation the pressure may be alternately raised and lowered, so as to give perfect control. AUGUSTIN A. CRANE, M.D., Waterbury, Conn.

V. 191

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COFFEE AND COFFEE SUBSTITUTES

To the Editor:—Many substitutes for coffee are being advertised, among which are "Vacuum Improved Coffee," "Kaffee Hag," "Postum" and "Monco." In what way do these differ from ordinary coffee? Please do not use my name. ENQUIRER, Columbus, Ohio.

ANSWER.—The extensive advertising of a certain coffee substitute opened the market for various forms of coffee and coffee substitutes. Each promoting concern, in its own interest, attempts to create a prejudice against ordinary coffee. Of the actual chemical constitution of coffee we know little. Ordinary coffee is made by subjecting the green bean to heat, in a rotating cylinder, until the bean has been browned to the right color. This process is one of destructive distillation. That is, the oils (aroma), etc., are formed as a result of the breaking up of organic substances at a high temperature. Some of these oils are retained in the bean, while a portion of the oils and a portion of the caffein are volatilized and escape. The amount of organic matter lost in the process of roasting is about 10 per cent.

"Vacuum Improved Coffee" is said to differ from ordinary coffee in that the bean is first subjected to the action of superheated steam, and then placed in a vacuum. The steam swells the grain and causes hydrolysis of some of the complex organic compounds. Immediately following this, the bean is subjected to negative pressure (a so-called vacuum) which removes some of the products of hydrolysis, notably furfurol. The caffein, it is claimed, is not removed. This preliminary treatment permits the roasting (during which process the aromatic oils are formed) to be done at a lower temperature than is ordinarily the case. This method is supposed to enhance the flavor and lessen the astringency. The question of the relative toxicity in comparison to ordinary coffee has not been scientifically investigated. The caffein content is practically the same as in ordinary coffee.

"Kaffee Hag" is a so-called "decaffeinated coffee." It is claimed to contain only 5 per cent. of the *original* amount of caffein, but otherwise to be the same as ordinary coffee. The processes of making both "Kaffee Hag" and "Vacuum Improved Coffee" are patented.

"Postum" or "Postum Cereal" is a "coffee substitute." It contains no alkaloids. According to a pamphlet issued by *Collier's*, it is stated to be "made from roasted and ground bran, wheat and molasses — mostly bran." Exaggerated claims have been made for the product.

"Monco" is another so-called "coffee substitute." According to information which has come to us, it is prepared from French chicory and roasted grains and vegetables (such as carrots, sweet potatoes, barley and rye). Tests made in the laboratory of the American Medical Association demonstrated the absence of caffein.

THE TOXICITY OF METHYL ALCOHOL

To the Editor:—Will you inform me what is the poisonous element in wood alcohol? I have seen many cautions as to its use and its dangerous elements, but never as to the poisonous one. I have used much of it in an alcohol stove for sterilizing instruments and heating water, and have never had any ill effects. Is there harm in using it in this way? Can the open flame be deleterious?

A. I. LAWBAUGH, M.D., Calumet, Mich.

ANSWER.—In the past, opinion has been divided as to the cause of the toxic effects produced by the ingestion of methyl alcohol. Some have held that these toxic effects were due to some of the contaminations, such as acetone, which are almost always present except in highly refined products, rather than to the methyl alcohol itself. The known facts with regard to this substance, however, indicate that it is in itself a highly toxic agent. The end-product of its combustion in the body (formic acid) is also toxic. Ordinary grain spirit or ethyl alcohol when taken in small quantities is largely burnt up in the body to carbon dioxid and water, and the unburnt excess is eliminated through the kidneys and the respiratory exchange. Methyl alcohol, on the contrary, is incompletely burnt up to the irritating formic acid (Pohl: *Arch. f. exper. Path. u. Pharmakol.*, 1893, xxxi, 281; editorial, THE JOURNAL, Nov. 30, 1912, p. 1974). The unburnt residue after a moderate dosage may not be completely eliminated after two days (Völtz and Dietrich: *Biochem. Ztschr.*, 1912, xl, 15; editorial, THE JOURNAL, July 20, 1912, p. 200). This accumulation of methyl alcohol in the system and its slow elimination possibly constitute the reasons for the special toxicity of methyl alcohol. This applies especially when methyl alcohol is given in repeated small doses. A single large dose of methyl alcohol may be less toxic than a similar dose of ethyl alcohol. Except in cases of idiosyncrasy, the superior toxicity of methyl alcohol is manifest chiefly under chronic conditions.

There is no reason to believe that methyl alcohol as a fuel possesses any special dangers or disadvantages. The products of its complete combustion are the same as those of the combustion of ethyl alcohol, namely, water and carbon dioxid.

VALUE OF ROUTINE FUMIGATION

To the Editor:—During a recent epidemic of scarlatina in this vicinity, a number of the "B. & B. Solidified Formaldehyde fumigators" were used. These apparently gave satisfactory results, as there have been no infections from the places where they were used. I am writing to ask whether or not these are considered efficient? I consider them more efficient than the so-called sheet method recommended by the state board of health.

This epidemic was among the schoolchildren at this place, and some of them became sick at the schoolhouse. The schoolhouse was not fumigated. I maintain that it should have been, and so expressed my opinion, but as I am not the health officer I did not try to enforce my ideas.

Will you kindly furnish me information along these lines?

M. B. GALLOWAY, M.D., South English, Iowa.

ANSWER.—The value of routine fumigation of rooms as a means for preventing the spread of infectious diseases has been seriously questioned of late years. The experience of the health authorities at Providence, R. I., extending over many years, indicates that the abandonment of room disinfection is not followed by any noticeable increase in the number of secondary cases. In New York City, terminal disinfection has been omitted since 1913 in cases of scarlet fever and several other diseases. Milwaukee, Boston and other cities have followed the example set by the authorities of Providence and New York, and in no case has there been evidence of the increase of diseases like diphtheria, measles and scarlet fever in consequence of the discontinuance of room fumigation. New York City has now adopted a definite program for study in this field, and the results, when available, will constitute an important contribution to this question of public health administration.

POISONING FROM INHALATION OF BENZIN

To the Editor:—I have a patient who now has to work in a room 20 by 100 in which he is exposed to the fumes and vapors of benzin for eight hours each day. It seems to affect him as follows: After getting to work he begins to get drowsy, head begins to swim and begins to feel light, and he gets dizzy. This effect is slight at first but gets increasingly worse, and soon the muscles of his arms feel tired and "all in" and gradually his legs become affected. He soon has some difficulty in breathing and if he goes to the open air, as he occasionally does, he falls to the ground, his legs giving way, and he feels "giggly" and foolish. He has no desire for food, always feels tired and drowsy, though unable to sleep well, feels thirsty and has a desire to void frequently, passing urine that is strongly odorous of benzin. He looks haggard and worn. Please let me know how deleterious to health this apparent benzin poisoning is, how to prevent it and how to rid the system of it.

H. I. B.

ANSWER.—Few textbooks discuss benzin poisoning, probably because it has been infrequent until comparatively recently. Holland ("Medical Chemistry and Toxicology," Ed. 3, p. 380) mentions general debility, palpitation of the heart, staring eyes, hallucinations, cough and chronic bronchitis as among the effects produced on workers in oil refineries and rubber factories by inhalation of benzin. Oliver ("Dangerous Trades," 1902, p. 492) says that women are more susceptible than men. Fatal cases are said to be rare. Persons vary in susceptibility to the toxic effects of benzin. The only means of prevention that have been suggested are ventilation of the workrooms and, for susceptible persons, change of employment. The system rids itself of benzin through the lungs; hence persons affected should be given fresh air.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

IOWA: Des Moines, Feb. 8-10. Sec., Dr. G. H. Sumner, State House, Des Moines.

KANSAS: Topeka, Feb. 8. Sec., Dr. H. A. Dykes, Lebanon.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Examinations Division, Mr. Harlan H. Horner, State Education Bldg., Albany.

PENNSYLVANIA: Philadelphia, Jan. 18-20. Sec., Mr. Nathan C. Schaeffer, Harrisburg.

VERMONT: Montpelier, Feb. 8-11. Sec., Dr. W. Scott Nay, Underhill.

Louisiana June Report

Dr. E. L. Leckert, secretary of the Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, June 3-5, 1915. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 57, of whom 41 passed and 16 failed. Two candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Howard University	(1914)	81.1
Tulane University of Louisiana	(1914) 83.5, 86.3; (1915) 76.3, 76.5, 77.4, 78.2, 78.7, 79.5, 80.3, 80.4, 80.6, 81.6, 81.8, 82.1, 82.1, 82.2, 83.2, 83.2, 83.3, 83.4, 83.5, 83.7, 83.7, 83.9, 84.3, 84.5, 84.6, 85.7, 85.8, 86.2, 86.3, 86.6, 86.9, 87.2, 87.7, 87.9, 88.1.	
Meharry Medical College	(1915)	77

FAILED

University of Alabama	(1912)	69.6
Howard University	(1912)	77.4*
Atlanta College of Physicians and Surgeons	(1913)	58.3
Atlanta School of Medicine	(1911)	75.4*
Chicago College of Medicine and Surgery	(1915)	78.7*
Tulane University of Louisiana	(1915) 73.9, 75*, 76.7*	
Meharry Medical College	(1912)	59.9
Memphis Hospital Medical College	(1912)	74.3
University of Tennessee	(1900)†; (1913) 61.9; (1914) 64.6, 68.8, 76.6*	
College of Physicians and Surgeons, Dallas	(1907)	57.1

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Rush Medical College	(1906)	Illinois
University of Louisville	(1913)	Kentucky

* Fell below the required average in one subject.

† Examination incomplete.

The following questions were asked:

CHEMISTRY

1. What are the properties of urea? 2. How would you test for urea in the urine? 3. (*a*) What are the leukomains or purin bodies? (*b*) Name some of them. 4. What are the principal globulins, and what part do they play in the coagulation of the blood? 5. (*a*) What are amido-acids; (*b*) Name the most important one of them. 6. In what form, and in what manner, does arsenic prove poisonous? 7. What does hydrogen sulphid form with metals? 8. Where, and how, does hydrogen sulphid form in the body? 9. What boron compound is of medical interest, and what are its chemical properties? 10. (*a*) What is hydrocyanic acid? (*b*) What is the toxic effect of this acid?

ANATOMY

1. Describe the occipital bone. 2. Name the principal ligaments of the hip joint. 3. Give origin and insertion of trapezius, omohyoid, tibialis anticus, transversalis and pronator quadratus. 4. Name the principal muscles of respiration. Give origin and insertion of any two. 5. Describe the spleen. 6. Name the abdominal viscera (*a*) completely covered by peritoneum, (*b*) partially covered by peritoneum. 7. Give the histology of a hepatic lobule. 8. Give origin and distribution of great sciatic nerve. 9. Name and give location of the principal glands of the small intestine. 10. What arteries form the circle of Willis?

PHYSIOLOGY

1. (*a*) What are the essentials for the clotting of blood? (*b*) Describe the process of coagulation. 2. (*a*) Where is lymph formed? (*b*) What is the difference between lymph and serum? 3. Describe what is meant by internal respiration. 4. (*a*) Where is the respiratory center situated? (*b*) What phenomena occur in a division of the spinal cord above the phrenic nerve? (*c*) What occurs if the cord is divided below the phrenic nerve? 5. Where and how is bread, where and how is butter, digested? 6. Name the secretory nerve of the stomach; what result follows its stimulation by the presence of food in the stomach? 7. Compare the effect of dividing the renal nerve with that of stimulating them (*a*), in regard to the blood supply, and (*b*) with reference to the secretion of urine. 8. What is the function of the third cranial nerve? State what muscles are innervated by it. 9. What are the functions of the cerebellum? 10. What are the constituents of the pancreatic fluid, and what part does each play in digestion?

MATERIA MEDICA

1. Name three vermicides. Give dose and state for which variety of worms used. 2. Diphtheria antitoxin: How prepared? Define unit. Give immunizing and curative doses for a child 3 years old. 3. Name the digitalis group. In what condition of the heart are the digitalis bodies especially indicated? 4. What is posology? Define Cowling's rule. Give an example using Cowling's rule. 5. Give the difference between an irritant and counterirritant. 6. Give symptoms of carbolic acid poisoning occurring by absorption. 7. Give physiologic action of chloral. 8. Give an example of a pharmaceutic incompatibility and a therapeutic incompatibility. 9. Give dose and usages of ricini oleum. 10. Give antidote, incompatibility and usages of argenti nitras.

GYNECOLOGY

1. How would you prepare a woman for a pelvic examination? Give also the various manipulations employed in the examination. 2. Under what conditions is the Sims speculum of decided advantage? 3. What changes may salpingitis undergo? 4. In what way does the tubercle bacillus find its way to the tube in a case of primary and secondary tuberculosis of the fallopian tube? 5. What are the terminations of a tubal gestation? 6. Give causes and treatment of sterility. 7. How would you diagnose a case of coccygodynia? 8. Name the various urinary fistulas. 9. Describe clinically and pathologically three types of endometritis. 10. What pathologic conditions demand hysterectomy?

SURGERY

1. Give symptoms of fracture of the base of skull. 2. What is cholelithiasis? How would you diagnose the condition? 3. Differentiate between obstruction of the common and cystic duct. 4. Describe the operation of phlebotomy. 5. Define a hematoma, a thrombus, a phlegmon, a furuncle, an embolus. 6. Give symptoms and treatment of mastoiditis. 7. How would you diagnose glaucoma? 8. What is hyperthyroidism? Give symptoms. 9. Give signs and symptoms of popliteal aneurysm. 10. Name four complications liable to occur in a male suffering from gonorrhea.

PATHOLOGY

1. Give the pathology of peptic ulcers. Where are the most unfavorable ulcerations situated? 2. What is the most common form of tumor of the brain? From where does it usually arise? 3. Define edema, giving clinical causes for same. 4. In carcinoma of the female breast, describe the gross and the microscopic appearance of a common variety, and give the usual points of metastasis. 5. Name four diseases in which the relative number of leukocytes are increased, and four in which they remain stationary or decreased. 6. Locate and describe the changes in the brain in bulbar paralysis, and describe the effect on other parts of the body. 7. Explain briefly the pathology of both lobar and lobular pneumonia. 8. What are the conditions predisposing to intestinal stasis? 9. Give the pathology of osteomyelitis. Where does it usually begin? 10. By what are malignant tumors characterized?

OBSTETRICS

1. (*a*) What structures enter into the formation of the pelvic floor; (*b*) how protect same during labor? 2. Name the bones, sutures, straits and symphyses of the obstetric pelvis. 3. What symptoms and signs would be suggestive of a pregnancy of two months' duration in a primipara? 4. What are the causes of dystocia occurring, respectively, in the uterus, vagina, pelvis and vulva? 5. A primipara fourth day after full term delivery, evidence of uterine infection, no hemorrhage, retained ovular remnants suspected: What would be the treatment? 6. (*a*) Define presentation, position and posture. (*b*) What causes may modify each and cause an abnormal labor? 7. What injuries may occur in the birth-canal incident to labor? How and when are they best discovered, and how should they be treated? 8. (*a*) What are the causes of hemorrhage before and after labor? (*b*) Treat in detail one of the conditions mentioned. 9. (*a*) What are the symptoms of impending eclampsia? (*b*) Treatment. (*c*) The treatment, should convulsions ensue? 10. State the management of posterior positions of vertex presentations.

PHYSICAL DIAGNOSIS — THEORY AND PRACTICE OF MEDICINE

1. (*a*) In estimating the various percussion sounds, what elements are to be considered? (*b*) What are the attributes of percussion elicited over an air-containing viscus? (*c*) Over an airless viscus? 2. Describe four of the principal heart murmurs, stating the lesion, the area of maximum intensity, the rhythm, the area of audition, and the direction of transmission of each. 3. What are the characteristics of accidental (hemic) murmurs? 4. What are the evidences of impending death? 5. (*a*) Name the various diseases associated with gross splenic enlargement; (*b*) differentiate any two of the diseases mentioned. 6. Show the differential features between chronic parenchymatous nephritis and chronic interstitial nephritis. 7. State the symptoms and early diagnosis of hip-joint disease. 8. Summarize the diagnosis of gastric carcinoma. 9. (*a*) What is the period of incubation and the character of the rash of scarlatina? (*b*) What are the frequent complications and sequelae? 10. Treat a case of pellagra.

HYGIENE

1. Name the sources of impurities in the air. 2. The parasitic diseases due to meat are caused by what organisms? 3. What are the causes of the unfitness of meat as food? 4. What should be the specific gravity of cow's milk for human consumption, and how is it rendered higher or lower in gravity? 5. What bacteria are capable of producing chemical changes in milk? 6. Upon what factors does the hygienic importance of waste matter depend? 7. What are the most dangerous elements of all waste matter? 8. What are the objections to sea-disposal of sewage? 9. What pathogenic bacteria may be found in water? 10. Name some of the trade infections, and state how they can be reduced or prevented.

California July Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at Los Angeles, July 12-16, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 84, of whom 57 passed, including 7 osteopaths and 3 drugless practitioners, and 27 failed, including 10 osteopaths and 6 drugless practitioners. Twenty-two candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
California Eclectic Medical College.....(1915)	76.8, 77, 79.9,	88.1
College of Medical Evangelists.....(1914)	76.5, 80.9; (1915) 76.5, 79.4, 82.3, 86.1,	86.3, 87.7, 87.8
College of Physicians and Surgeons, Los Angeles.....(1914)	80.3, 80.8; (1915) 77.9, 81.8, 82.4, 82.9, 83, 83.2, 85.8, 85.8, 87, 87, 87.4, 87.4, 87.4, 88.5, 88.9, 89.3, 89.4, 90.7, 90.5,	93.4
Hahnemann Medical College of the Pacific.....(1915)		82.5
Oakland College of Physicians and Surgeons..(1915)	81.1,	81.4, 81.4
Northwestern University.....(1914)		89.5
Barnes Medical College.....(1911)		75.1
St. Louis College of Physicians and Surgeons.....(1910)		75
Columbia Univ., Coll. of Phys. and Surgs.....(1911)		90.1
Cornell University.....(1915)		92.5
New York Homeo. Med. Coll. and Flower Hosp.....(1913)		96.2
Jefferson Medical College.....(1915)		81.5
Woman's Medical College of Pennsylvania.....(1913)		87.3

FAILED

College	Year Grad.	Reciprocity with
California Eclectic Medical College.....(1914)	71.3; (1915) 55.8, 58.2,	62.4, 71.3
College of Phys. and Surgs., Los Angeles.....(1914)		72.5
Atlanta School of Medicine.....(1907)		35*
Tufts College Medical School.....(1903)		63.2
Meharry Medical College.....(1913)		37.9
Vanderbilt University.....(1889)		40
University of Toronto.....(1870)		66

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Gross Medical College.....(1900)		Nebraska
Yale University.....(1900)		Connecticut
College of Phys. and Surgs., Chicago..(1898) Iowa;	(1904)	Illinois
Dunham Medical College, Chicago.....(1900)		Illinois
National Medical University, Chicago.....(1897)		Illinois
Rush Medical College.....(1900, 2)		Illinois
Keokuk Medical Coll., Coll. of Phys. and Surgs.....(1908)		Nevada
University of Maryland.....(1868)		Georgia
Detroit College of Medicine.....(1888)		Washington
University of Michigan Medical School.....(1894)		Michigan
University of Mich., Homeo. Med. School.....(1886)		Michigan
Eclectic Medical College, Cincinnati.....(1873) Ohio; (1880) Indiana; (1886) Ohio;	(1889)	Tennessee
Homeopathic Hospital College, Cleveland.....(1893)		Ohio
Medical College of Ohio.....(1892)		Illinois
Homeopathic Medical College of Pennsylvania.....(1881)		Iowa
Western Pennsylvania Medical College.....(1897)		Penna.
University of Vermont.....(1896)		R. Island

* Official information states that this candidate is not a graduate.

Oklahoma July Report

Dr. Ralph V. Smith, secretary of the Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, July 13-14, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 70. The total number of candidates examined was 30, of whom 22 passed and 8 failed. Twenty-one candidates, including 1 osteopath, were licensed through reciprocity. Two candidates were granted reregistration licenses. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Chicago College of Med. and Surg.....(1915)	75.5, 77,	80.5
University of Illinois.....(1915)		78
University of Louisville.....(1915)		88
Ensworth Medical College.....(1907)		83
Missouri Medical College.....(1887)		73
Leonard Medical College.....(1913)		74
University of Oklahoma.....(1915)	76, 79, 81.3, 82.5, 83,	83.5, 84.2, 85, 86, 89.7.
Meharry Medical College.....(1909)		71.7
Baylor University.....(1915)	86,	87
Southern Methodist University.....(1915)		84.2

FAILED

College	Year Grad.	Per Cent.
University of Arkansas.....(1912)	72*; (1913)	74*
Chicago College of Medicine and Surgery.....(1915)		75*
University of Oklahoma.....(1915)		79*
Meharry Medical College.....(1914)		54
University of Tennessee.....(1914)	70.5*; (1915)	78*, 81*

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
University of Arkansas.....(1914)		Arkansas
Atlanta College of Physicians and Surgeons.....(1912)		Georgia
University of Louisville.....(1894) Tennessee;	(1907)	Kentucky
College of Physicians and Surgeons, Baltimore.....(1893)		W. Virginia
Eclectic Medical University.....(1902)		Missouri
Northwestern Medical College, St. Joseph.....(1893)		Kansas
Univ. Med. Coll., Kansas City...(1909) Tennessee;	(1910)	Kansas
Washington University.....(1910)		Missouri
Jefferson Medical College.....(1886)		W. Virginia
Meharry Medical College.....(1903)		Arkansas
University of Nashville.....(1905)		Arkansas
University of Tennessee.....(1895) Texas;	(1907)	Tennessee
Vanderbilt University.....(1893) Arkansas;	(1912)	Kentucky
Baylor University.....(1913)		Texas
Dallas Medical College.....(1902)		Texas
University College of Medicine, Richmond.....(1901)		W. Virginia

* Fell below the required average in one or more subjects.

Book Notices

VAGOTONIA. A Clinical Study in Vegetative Neurology. By Dr. Hans Eppinger and Dr. Leo Hess. Authorized Translation by Drs. Walter Max Kraus, A.M., M.D., and Smith Ely Jelliffe, M.D., Ph.D. Paper. Price, $1. Pp. 93. Nervous and Mental Disease Monograph Series No. 20. New York: Nervous and Mental Disease Publishing Company, 1915.

The authors attempt to reduce certain so-called neuroses of internal organs to a definite syndrome with a definite physiologic and pathologic etiology. The physiologic and pharmacologic considerations which lead them to evolve the neurosis of the autonomic nervous system, vagotonia, are exceedingly interesting. Even a synopsis of these would exceed the limits assigned to this review. We cannot refrain, however, from giving a summary of the authors' therapeutic observations. The therapeutic measures are directed, they say, not against vagotonia as a constitutional condition, but against those symptoms of irritation in the autonomic system which may be considered as irritative states superimposed on the constitutional condition.

"Atropin is the best antidote for the spastic states. It is of therapeutic as well as diagnostic value, and should be tried in all diseases due to or associated with vagotonia. . . . It may be used to great advantage in bronchial asthma, in which small doses may be used without danger for many weeks. It should be given in doses of 1 to 2 mg. a day, subcutaneously, which may be increased to 3 mg., after which the former dosage is resumed. Vagotonic gastric disturbances, gastric ulcer, as well as gastric crises, are benefited by the administration of atronin. Likewise, the gastric disturbances following the use of infusion of digitalis, certain cardiac disturbances, and the troublesome subjective symptoms of extrasystolic arrhythmias, are ameliorated by the use of atropin."

The authors plead for a more extensive administration of atropin, especially in those varied obscure and troublesome complaints which, owing to lack of anatomic basis, are called "nervous." If a patient suffering from vagotonia is not benefited by atropin or substances containing it, the reason may be that the dosage is too small. The authors feel that atropin is only a substitute for some physiologic "atropin" which is circulating in the body. The limitations of its use are that it does not affect all branches of the autonomic system equally, the pelvic nerve being but slightly affected. The beneficial effect of epinephrin in many spastic states of the autonomic system (bronchial asthma, many forms of gallstone colic and diarrhea) is a good proof that both symptomatically and etiologically vagus paralysis and sympathetic stimulation are closely allied. This certainly sounds like an optimistic expression of belief in a drug therapy based on a new medical conception of disease. The authors seek the real causation of vagotonia in some disturbance of the internal secretions. They state that not only has an insufficiency of the chromaffin system been proved to exist in certain types of endocrinopathic individuals, but also it has been shown that these individuals show anomalies in the lymphatic system. Thus, they see a relationship between the vagotonic constitution and status thymicus, and further, they are convinced that vagotonia is the expression of an inferior constitutional make-up. This research in so-called visceral neurology, which bids fair to become of practical value to the general practitioner, deserves careful study and reexamination. We may, therefore, be thankful for the translation of what promises to become an oft-quoted work on vegetative neurology.

THE MEDICAL CLINICS OF CHICAGO. Paper. Bi-monthly. Price, $8 for 6 numbers. Philadelphia: W. B. Saunders Company.

These clinics are patterned after the Murphy Clinics; they differ from the latter in that this enterprise covers general medicine, and includes reports of clinics conducted by many men, whereas the others are the clinics of one man and are devoted to surgery. Three numbers have already been issued, and the subjects discussed include general medicine, pediatrics, ophthalmology, neurology and dermatology. They represent the clinics of ten physicians, conducted in four different institutions, the chief of which is the Cook County

Hospital. Naturally, the character of the clinics varies: in some the men make their talks in brief, concise form, and give a clear conception of the cases, with emphasis on the important points connected with each; others are not so careful in the presentation of their cases. From the former, of course, the reader gets a clear concept of the case; the latter, while not valueless, are not so practical as they otherwise might be. Some have a tendency to the bizarre and picturesque, and the reader's attention is distracted by the emphasis laid on unimportant things. In some of the clinics, questions and answers between the physician, the intern, the student and the patient seem to have taken up the greater portion of the time. We see no reason why space should be occupied with what are, in some instances, trivialities. This applies, however, in only two or three instances. While the vast majority of the cases have been well selected, a few would seem to be of no value.

There is an apparent lack of editorial revision. If these clinics are to take the place which the publishers, editors and contributors desire they shall take, those responsible should remember that insignificant comments, absurd questions, and the use of ungrammatical language should be eliminated. The foregoing criticisms are intended to be constructive, not destructive.

This method of instruction has a distinct place in medical literature, and, on the whole, this series of clinics is a worthy exponent of its type; the general practitioner will find this series of decided practical value, full of instruction, elementary as well as technical.

Medicolegal

Father-In-Law Not Liable for Medical Services

(*Morse et al. vs. Friend* (*Colo.*), *149 Pac. R. 618*)

The Supreme Court of Colorado says that this suit was instituted by Dr. Friend on an account for professional services, judgment being obtained by him for $84 against both J. W. Morse and William Morse, father and son. Both men had families and lived in separate dwellings during the period for which the services were rendered. They were engaged in some sort of a business partnership under the firm name of J. W. Morse & Son. Dr. Friend had for several years prior been the family physician of J. W. Morse. The services over which the dispute arose were rendered in the treatment of the wife of William Morse. This was not at the instance or request of J. W. Morse. The basis of the claim against J. W. Morse was proof that he had in other instances made payment to Dr. Friend for services rendered to his children, including William Morse, and on a letter written by J. W. Morse to Dr. Friend, which was in effect: "Just received statement of William Morse account. Please find enclosed check for $25. I can't spare any more at present. I think your charges are rather high. I have talked with M.D.s, and they say that fever cases generally are from $35 to $60 per case. But I will do the best that I can. You know that Will hasn't anything." The check referred to was signed J. W. Morse & Son, and drawn on the firm account. This was not such a promise as is contemplated by the statute of frauds, requiring promises to answer for the debts of others to be in writing, etc., and the mere fact that J. W. Morse had paid former accounts did not create a liability. Besides this, it appeared that the account was entered and rendered as against William Morse alone. It appeared also that William Morse had, prior to payment made by his father, personally made a payment of $50 on the account by means of a check signed by him, as J. W. Morse & Son, and drawn on the firm account. Furthermore, J. W. Morse had, after the services involved in this case were rendered, and before this suit was instituted, paid by him personal check to Dr. Friend the sum of $120.50, and on the face of the check it was written: "For professional services to date." This check was accepted and cashed by Dr. Friend, who himself testified that he rendered no services for either of the Morses subsequent to the date of that check. It was error to instruct the jury in effect that if it appeared that, at any time in years past, the plaintiff had served as a physician in the family of J. W. Morse, and that, in so doing, had attended some members of the family of William Morse, and that J. W. Morse had paid for such services, and if J. W. Morse had given the check for $25 above referred to, then the jury must find J. W. Morse liable. Wherefore the judgment recovered as hereinbefore stated is reversed, with instruction to dismiss the case as to J. W. Morse, and to render judgment against William Morse for the amount so found by the jury to be due the plaintiff.

What Constitutes Severance at "Joint"

(*Newman vs. Standard Accident Insurance Co.* (*Mo.*), *177 S. W. R. 803*)

The Kansas City (Mo.) Court of Appeals reverses a judgment obtained by the plaintiff on an accident policy of insurance which contained the provision: "For the loss of thumb and index finger of either hand by severance at or above metacarpophalangeal joints, one third of the principal sum" of $7,500. While hunting, his gun had been discharged into his left hand so that it became necessary to amputate the thumb and the index finger. The actual cutting, or severance, was through the bone of the thumb and finger two-eighths and three-eighths inch, respectively, below the articulation, or, to express it differently, below the point at which the ends of the bones in the body of the hand and in the thumb and finger came together. It was far enough below to leave two stubs of the thumb and finger bones plainly to be seen in a roentgenogram taken of his hand, and plainly showing two ends or heads of the bones jointed together, the articulation not being disturbed in either the thumb or the finger. The evidence also showed that the plaintiff could move, or work, these joints. He claimed the right to recover one third of the principal sum under the clause quoted. But the court holds that was a mistake. In grading compensation to the character of the injury, the company had a right, the court says, to stipulate that the severance should be at the exact point specifically stipulated, before the sum named for that character of injury should be due. The contract, in using the word "joint," fixed a place, a point, of severance. It had no reference to the structures which must exist in order that a joint might be made. The court does not mean to hold that for the severance to be "at the joint," within the meaning of the policy, it must follow and coincide with the line of articulation, but only that it must be such as destroyed the joint as a joint; that is, as an anatomic mechanism. That is to say, the joint must be dismembered. It was error to admit the testimony of surgeons, as experts, to prove the anatomic, or scientific, meaning of the word "joint" as applied to the finger, and that the amputation below the place of articulation was at the joint. There was no ambiguity in the contract, and it was for the court, not the jury, to say what it meant.

Liability of Surgeon for Burning of Patient During Operation

(*Reeves vs. Lutz* (*Mo.*), *177 S. W. R. 764*)

The St. Louis Court of Appeals, on the second appeal of this case, reverses a judgment obtained by the defendant, who was sued for alleged malpractice when employed to remove a cancer from the breast of the plaintiff's wife. The court says that the evidence was that the defendant personally adjusted a hot water bag between the lower limbs of the patient immediately before commencing the operation, and that the bag was permitted to remain there without examination for as much as an hour and a half or two hours, for the operation, which was an extensive one, consumed so much time. As a result, one of the limbs was severely burned. All the evidence was that it was a proper practice employed by the most enlightened members of the profession in the locality to use such hot water bags in like circumstances. The hot water bag was wrapped with a towel, and the patient was clad with a cotton flannel garment to protect the skin at

the time, and such, too, was the usual practice. It appeared, however, that the patient had varicose veins in the limb burned, and the evidence was that they render one more liable to be burned than if not so afflicted; that the defendant knew of this condition and of the likelihood to enhanced susceptibility to burns from that cause. Besides, there was evidence that the patient moved and kicked some, but no examination was made during the entire time as to whether the hot water bottle was disturbed in its position so as to injure her. Then several expert witnesses were permitted to testify, on behalf of the defendant, that burns are frequently inflicted on patients during operations. The court holds, however, that the questions and answers as framed were prejudicial, for they in no wise discriminated the case wherein a burn might have been inflicted through carelessness, in which event liability to respond therefor would appear, from one which occurred when ordinary care was exercised by a skilful surgeon as through unexpected movement of the patient during the operation which caused the burn, and therefore could not have been obviated by due care, and on account of which no liability may be entailed. The mere fact that all surgeons may be careless at times does not relieve another from performing his duties with due care in the particular case. Four separate instructions given for the defendant iterated and reiterated the same proposition of law to the jury, though in different phraseology, to the effect that the defendant was required to exercise only reasonable care; that is, such as an ordinarily skilful and careful surgeon is accustomed to exercise in like surgical operations under similar circumstances in the same locality, and that he should be acquitted of fault if he did this. The proposition of law was well enough, but, when coming from the court repeatedly in instructions on evidence tending to show that all surgeons frequently burned their patients in like cases, it would seem to mislead the jury into believing that the defendant could not be required to respond, though remiss in the particular case, for his conduct was to be measured only by what such average physicians and surgeons usually do.

Conditions Not Rendering City Liable for Typhoid Fever

(City of Duncan vs. Tidwell (Okla.), 150 Pac. R. 112)

The Supreme Court of Oklahoma reverses a judgment for $675 obtained by plaintiff Tidwell, against the city of Duncan, as damages for typhoid fever suffered by members of his family, and alleged to have been caused by the defendant's negligence in respect to the condition of its dumping ground, which was on a lower plane and 1,940 feet southeast from the plaintiff's dwelling house, about 2½ miles northeast of the defendant city. In this dumping ground it appeared that dead animals and human excrement, with other garbage, perhaps, were deposited in trenches 4 or 5 feet deep, the dead animals being covered with dirt and the excretions with lime and, when the trenches were about full, with dirt, although more or less of both were sometimes exposed. There was also some evidence tending to show an abundance of flies both at the dumping ground and at the plaintiff's house. The court holds that, in the absence of evidence reasonably tending to exclude other sources from which the *Bacillus typhosus*, causing typhoid fever, might have been derived, or to show that such bacillus existed in any of the matter deposited in the defendant city's dumping ground, it could not be inferred that members of the plaintiff's family contracted said disease from said dumping ground, located as above stated, notwithstanding that the winds had blown from that direction toward the plaintiff's dwelling house, and that there was an unusually great number of flies at said ground and at said house during the summer preceding the attack of such fever. The court says that it ventures no opinion on the question as to whether the jury might have found that flies or dust could have carried typhoid bacilli from the dumping ground to the plaintiff's dwelling house, or to any place where the afflicted persons were, but it contents itself with pointing out that there was no evidence reasonably tending to prove that they did so, or that these grounds were the source from which the disease was contracted.

Miscellany

A "Sonnet from the Portuguese"

Dr. Ennes publishes a communication in the *Medicina Contemporanea* of Lisbon describing the exalted task of the physician and its importance to the community and to the individual. "No career is so high in its ideals and few require such preliminary training. . . . The medical career should ensure prosperity and security beyond all others. It should, but it does not. . . . The practice of medicine is always the eternal surprise, both in the evolution of the affections we are treating and in the behavior of the patients themselves. . . . The best physicians may fail to make a success of their career where mediocre ones succeed. Aside from the principles of dignity and honor indispensable for all, success, in our profession, seems to be almost always a matter of chance." He cites a number of personal experiences showing the ways of successful Lisbon physicians, now dead. Dr. Baldy always explained to the family, after coming out of the patient's room, the nature of the disease, the differential diagnosis and the reasons for the treatment instituted, generally including a Latin quotation. Dr. Theotonio replied to questions by saying that he was due in his lecture room, but he would have leisure to answer questions between 10 and 11 at his office on Saturday, and then took his leave with extreme deference. Barral was most suave and tactful, and Bizarro gruff and morose; but the latter was the one called most in consultations. All these men were eminent in medical practice in Lisbon for years, with their widely differing clinical technic, showing that the favor of public opinion is not a thermometer of anything in the medical career. "The physician has to steer between Scylla and Charybdis: If his wife makes no calls, people say she is haughty; if she makes calls, that she is drumming up trade for her husband. If he writes many prescriptions, they say he is in league with the druggist; if not, that he does not study his patient's case enough. If he goes into politics, they say he had better stick to his profession; if he keeps out of politics, they say it is from lack of public spirit and culture. If he repeats his visit to the patient, it is to run up a bigger bill; if he does not call again, he is neglecting his patient. When he renders his bill, the total is always denounced as too high. When he asks for a consultation, the public says that this proves his incompetency; when he does not call for a consultation, they say it is because he does not care to display his ignorance to his colleagues. When the patient gets well he ascribes his recovery to Nature, but, if he dies, the family denounce the physician." Ennes concludes with the exclamation that even with all these drawbacks and the overcrowding of its ranks, yet he can enthusiastically declare that the medical profession is the most beautiful of all: "Quem não quererá ser medico!"

Overcrowding Building Space

John Ihlder, field secretary of the National Association on City Housing, says that the tendency to build tenements in cities up in the air instead of spreading them out on the ground really only offers temporary profit to those who sell or rent. It raises values in a restricted area by preventing those values from being spread over a larger area, and constitutes really a false basis of economy. As items of this false economy he mentions more rapid depreciation and extra cost for maintenance. To this must be added on the part of the community all the cost for increased sickness, inefficiency and immorality; for hospitals, charity and police. He gives it as his experience in studying the question of housing in the various cities and the tendency to overcrowd the building space, that when he went into a city where the rule was widely spaced, single family cottages, he found the real estate men saying that they could make no money by following the rule, that they must put their cottages closer together or even build terraces. In a city where the terraces had developed into the row-houses, as in Philadelphia, he found them argu-

ing for two-family houses. Where two-family houses had been the rule, as in large areas of Brooklyn, he found them arguing for the three-family house, and so on, until in Manhattan, where the six-story row-tenement is the standard, he found them arguing for weaker regulations, which would permit them to build higher and to fill their lots more completely. To a question asked a real estate man in Manhattan as to whether there was any stopping point short of one solid building filled with dark rooms, in which people would die as fast as they could move in, and so establish an equilibrium, he received no answer. In Philadelphia, where he asked the same question, a real estate man replied that the trouble was due to the failure to realize that there is just as great if not greater profit to be made by building a city out as by building it up. Ihlder says that perhaps therein lies the secret—provision of space may be made to run with, and not against, profit. The question of profit to the real estate owner seems to be still the chief consideration. Ihlder says that the extra profit from building up is only temporary, because as soon as new values are established, he must again build higher in order to conserve or increase his profits. All that is permanent under this procedure is a lower standard for the city's housing.

Digestibility of Animal Fats

In Bulletin 310 of the United States Department of Agriculture, C. F. Langworthy and A. D. Holmes give the history and results of some experiments on the digestibility of lard, beef fat, mutton fat and butter. It is said that, notwithstanding that fats as sources of energy are from two to four times as effective as either proteins or carbohydrates, their use in diet has received less attention from investigators than other nutrients, that it has been taken for granted that favorable combinations of fat are thoroughly assimilated, and that they do not differ much in their digestibility. These experiments were undertaken, therefore, to determine the thoroughness of digestion of fats, the specific dynamic effect of diet rich in fats of different kinds, the relation of availability to total energy value of fats, and the relation of domestic ways of using fat to the quality of foods. In these experiments the fats were incorporated in cornstarch pudding, which was carefully colored and flavored so that the fatty odors and flavors of the different varieties of fats were disguised, and the healthy medical and dental students, between 20 and 30 years of age, employed in the experiments were not apprised of what they were eating; in this way, any possible psychic effect was eliminated. It was found desirable to incorporate the food containing the fat in a simple mixed diet, as the ordinary individual soon tires of any single food. In these mixed diets were included a commercial wheat biscuit, fruit, tea or coffee and a little sugar. Each test period included three days, for nine meals, a period which it was found was long enough for the purpose but not of sufficient duration to make the diet distasteful. The ration was served for one test period in each week followed by a rest of four days, during which the subjects lived on the ordinary mixed diet. Data were recorded with reference to the physical condition of the students both before and after the experimental periods. The amounts and kinds of foods eaten during each three-day experimental period and the total quantity of feces were recorded and samples of both food and feces were analyzed to determine the quantity of protein, fat, carbohydrate and mineral matter retained and assimilated by the body.

Results with the different fats employed may be summarized as follows: The coefficients of digestibility, making allowance for metabolic products extracted from the feces in addition to the fat eliminated, were, for lard, 97.3 per cent.; for beef fat, 93.1 per cent.; from mutton fat, 87.6 per cent.; for butter, 97.1 per cent. The average energy value available per man per day, as calculated by the usual factors, was 2,235 calories for lard, 2,730 calories for beef fat, 2,145 calories for mutton fat and 2,420 calories for butter. These values, it is said, might be insufficient for severe muscular activity, but would meet the needs of persons following sedentary occupations. The average coefficients of availability of energy for the total ration including the fats named were, respectively, lard, 93 per cent.; beef fat, 92.7 per cent.; mutton fat, 91.5 per cent.; butter, 93.9 per cent. These values, it is said, are somewhat higher than the 91 per cent. which has been found to represent the coefficient availability for the ordinary mixed diet. It is concluded, therefore, that the different fats did not exercise any unusual effect on the digestibility of the other constituents of the rations. It was also found that fats of low melting point are more capable of complete assimilation than those of a high melting point, and that fats differ in their melting point according to the portion of the body from which they are taken. In the experiments when the amount of beef fat was 140 grams or over, a laxative effect was experienced which disappeared when the amount was decreased. This result was not noted with the other fats, and it was thought that this indicates a higher limit of tolerance for the other fats. The experiments also indicate that, contrary to popular belief, lard is not less digestible than other fats.

Society Proceedings

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

Twenty-Eighth Annual Meeting, held at Cincinnati, Dec. 13-15, 1915

(*Concluded from page 143*)

Treatment of Lymphosarcoma with Radium

DR. HOWARD A. KELLY and DR. CURTIS F. BURNAM, Baltimore: Lymphosarcoma begins as a local infection, and, growing more or less rapidly metastasizes, finally invading the lymphatic system, and invariably causing death in from several months to a couple of years. It is beyond the reach of surgical relief.

We have had a series of twenty cases, all but two identified by a microscopic examination of the tissues. Most of the patients were in an extremely advanced stage of the disease. Twelve had been operated on, and these with one exception had rapidly recurring masses in the neck. Out of this group of twenty, thirteen, or 65 per cent., are apparently cured. Six patients have died of the disease. Five of this group had been operated on, and all were advanced cases but one. On the basis of this experience we believe that lymphosarcoma ought not be operated on, but should be subjected to radium therapy at the earliest possible moment. The results improve if the cases are obtained early. The amount of radium used varied. While in the early cases the diseased area alone was treated, in the later cases the entire lymphatic system of the neck, axillae and torso were included. There were several instances of primary extensive lymphosarcoma of the mediastinum. These responded as readily as those more superficially placed.

Conservative Pelvic Surgery

DR. FLOYD W. MCRAE, Atlanta, Ga.: I have done conservative operations on 338 women. I have been able to get reports to date from only ninety-three, thirty-two of whom have reported pregnancies. Practically all have gone to full term and been delivered of healthy children. One woman has had three children, another two, and another has had three or more induced abortions. Another was delivered of a living child by cesarean section on account of uremic convulsions. Both mother and child are now in good health. Of the 338 women, seventeen have had subsequent operations done. I have included in this record only the women whose pelvic organs were left in a state compatible with possible future pregnancies. It does not include women whose tubes or uteri were removed, or in whose cases partial hysterectomies were performed precluding pregnancy. I have resected cystic ovaries, preserving all healthy stroma, suturing accurately with fine catgut. I have endeavored to separate adhesions, embedded ovaries and tubes in such a way as to leave the least possible area of raw surface, hanging up prolapsed

V. 191

ovaries, plicating the ligaments, and so readjusting uterus, tubes and ovaries as to approach as nearly as possible the normal arrangement. A very large majority of these women have been relieved of their suffering and restored to healthful womanhood.

Cholecystostomy Versus Cholecystectomy

DR. CHARLES H. MAYO, Rochester, Minn.: That there is still an opportunity for improvement in the treatment of gallbladder and gallduct disease is shown by the fact that of 370 patients seen during July, August, September and October, 1915, forty-eight had been previously operated on, some of them twice, for the same disease. The mode of infection is still under discussion. The experimental researches of Rosenow, however, have proved that the more common method of invasion is by bacteria conveyed through the general circulation. Cholecystostomy and the removal of stones cure symptoms of mechanical obstruction. Cholecystostomy does not cure chronic cholecystitis and cannot restore the destroyed walls of the gallbladder, or free the gallbladder from adhesions. For these and for all cases in which infection is the major feature either with or without stones, cholecystectomy is the better method of treatment. In large groups of cases the mortality will be lower than that which follows cholecystostomy. Chronic pancreatitis with gastric symptoms may persist following cholecystectomy.

Advantage of Separate Suture of the Mucous Membrane in Gastric Surgery

DR. RICHARD A. BARR, Nashville, Tenn.: It is very easy to divide the peritoneum and the muscle down to the submucosa and to separate them from it without cutting through. In the region of the pylorus a submuscular resection of the submucous and mucous coats may be made with less technical difficulty than is encountered in doing a pylorectomy, and in many cases serves much the same purpose. In pylorectomy and partial gastrectomy, division down to the submucosa, and suture of this structure and the mucosa before dividing them prevents soiling, give very satisfactory control of hemorrhage, and the completed suture line is much less rigid and less thick than that obtained by the usual method.

Moschcowitz's Operation by the Inguinal Route for Femoral Hernia

DR. J. D. S. DAVIS, Birmingham, Ala.: If the same precautions are resorted to in femoral hernia that are utilized in inguinal hernia (high ligature of sac, secure closure of the internal ring from above, and aseptic wound healing) relapse would be as rare as in inguinal hernia. The inguinal route of approach renders resection and anastomosis a very easy procedure compared to a resection in an operation by the crural route. The supplementary abdominal incisions so often necessary in resection when the crural operation is made need not for a moment even be considered when the inguinal operation is made. When femoral hernia is attacked by a high incision (inguinal route), anatomic exposure of the femoral ring can be made from above, bringing into view Cooper's ligament, which is utilized in the closure of the ring. The skin incision is not unlike that made for the Bassini operation, except when the sac is found adherent, when the incision may be extended down into the thigh so as to give room for extirpation of the sac.

A Clinical and Experimental Study of Postoperative Ventral Hernia

DR. WILLARD BARTLETT, St. Louis: The causes of postoperative ventral hernia are incisions in defiance of anatomic and physiologic principles, improper wound closure, needless drainage and tamponade, postoperative increased intra-abdominal pressure and wound infection. Experiments on dogs produce no sign of hernia when one layer is preserved. In the human subject the hernial tendency is corrected preoperatively by reducing intra-abdominal fat and intestinal contents, with rest in bed, liquid diet and free catharsis. The best postoperative procedure leaves the sac intact, utilizing the sac wall and scar tissue; but, if necessary, the abdominal contents may be reduced. If there is undue tension on the reconstructed wall, or interference with the movements of the lower ribs, failure is sure. The after-treatment is of vital importance, dealing chiefly with meteorism or straining of any kind.

DISCUSSION

DR. JOHN YOUNG BROWN, St. Louis: I have had occasion to do the operation described by Dr. Davis once, and I agree with him fully that it does away with the necessity of a supplementary abdominal incision.

DR. J. GARLAND SHERRILL, Louisville, Ky.: One point which I should like to emphasize as perhaps explaining the causation of postoperative hernia is interference with the nerve supply of the abdominal wall. In primary operations we should always avoid, as far as possible, damaging the nerve trunks, because muscle or fascia that is not supplied with nerve force will always be weak. About ten years ago I began the treatment of cases of strangulated femoral hernia according to the plan described and proposed by Dr. Davis, and I have found it to be exceedingly valuable.

DR. CHARLES H. MAYO, Rochester, Minn.: The point brought out by Dr. Davis regarding the cure of femoral hernia by the inguinal route is very important in certain cases of strangulation; still, the old methods of treatment of femoral hernia are successful.

Adenomyoma of Round Ligament and Incarcerated Omentum in all Inguinal Hernias Forming One Tumor

DR. THOMAS S. CULLEN, Baltimore: The patient, a woman aged 43, complained of a lump in her groin for several years. It was very firm and appeared to be cystic. It was about 4 cm. long, 2 cm. broad and somewhat lobulated. She also complained of pain in the appendical region. I found the rectum firmly adherent to the left ovary over a considerable area. The omentum passed down through the hernial opening near the right internal inguinal ring, and then directly out into the adipose tissue of the anterior abdominal wall. The tumor consisted of numerous cysts, some filled with clear colored contents, others with slightly turbid fluid, and quite a number with chocolate-colored fluid, strongly suggesting adenomyoma.

Unilateral Hematuria Associated with Fibrosis and Multiple Microscopic Calculi of the Renal Papillae

DR. R. L. PAYNE, JR., Norfolk, Va.: I wish to report a case of symptomless unilateral hematuria in which bisection of the kidney showed macroscopically a normal cortex or parenchyma, every papilla, however, presenting a cherry red appearance typical of angioma. The kidney was removed, and careful microscopic studies disclosed an absence of pathologic findings in the cortex or parenchyma proper; but the papillae showed definite chronic inflammatory changes. These changes consisted of (1) an overgrowth of connective tissue; (2) multiple microscopic calculi; (3) dilated capillaries with the small calculi in close apposition or the capillaries surrounded by the connective tissue proliferation, and (4) a network of dilated capillaries on the surface of the papillae, many of which were ruptured with free blood escaping. These numerous, though small, varices were evidently the source of the hemorrhage, and the inference is that the numerous calculi, aided by the connective tissue which they had originated, succeeded in causing an obstruction to the venous return with a subsequent dilatation of the capillaries and resulting varicosities.

Pancreatic Cyst

DR. JOSEPH RANSOHOFF, Cincinnati: The tumor was situated in the left upper quadrant, projecting into the loin, distinctly fluctuating and of slow growth. When first seen it was nearly as large as an adult head. Cystoscopic examination showed a bloody stream of urine issuing from the left ureteral orifice. Indigocarmin injection demonstrated equal function on the part of the two kidneys. A diagnosis was made of cystic sarcoma of the left kidney. Lumbar exposure of the kidney showed it to be normal. Median incision then displayed the cyst of the pancreas, projecting between colon and stomach with the spleen six or eight times its normal

size. The hematuria disappeared after the operation. The pressure of the pancreatic cyst on the renal and splenic vein had produced the hematuria and the enlargement of the spleen.

DISCUSSION

DR. FRANCIS R. HAGNER, Washington, D. C.: In splitting a kidney from pole to pole we are doing a partial nephrectomy. The destruction of the kidney from that incision is really remarkable. In Dr. Ransohoff's case, I believe the hemorrhage was due to pressure on the renal vein. Recently I had a patient on whom a prostatectomy was done three years ago, and he came back with hemorrhage from the left ureter. I catheterized the ureter and found a stricture just at the entrance of the ureteral orifice, while on the other side, the urine was clear. This stricture was dilated and a catheter passed up to the kidney. The urine was still clear, and the next day hemorrhage stopped. This patient has had three recurrent hemorrhages in that way, but after dilation of the ureter, the hemorrhage ceased.

DR. JOHN T. MOORE, Houston, Texas: I have had one case of cyst of the pancreas about the size of one's head, that did not give rise to hematuria.

Hydatid Cysts of the Liver with Report of Two Cases

DR. GEORGE BEN JOHNSTON, Richmond, Va.: We have had two cases of hydatid cysts of the liver during the past two years, and about six months ago another case was reported in a Richmond hospital. Prior to 1913 only two cases of tenia echinococcus infection were reported from Virginia, and 250 from the United States and Canada. The Virginia cases occurred in Alexandria and Staunton. There was, however, another case in which infection occurred in Virginia, but was reported from Buffalo by Cary and Lyons. Our two patients came from the rural districts, and were exposed to infection both from dogs and from meat which was not inspected properly. Surgery is the only method of treatment for this condition. Wherever possible, it is always best to remove the cyst in toto; if this is impossible, to remove as much of the cyst as possible and drain, and if this is impossible, to aspirate the cyst.

Intussusception in Infants

DR. LEWIS S. MCMURTRY, Louisville, Ky.: In dealing with a case of suspected intussusception in a baby, the physician should, if possible, decide the diagnosis before leaving the house. The fate of the patient depends on early diagnosis. When abdominal section is done, success will depend more on the operator's expedition and skill, with refinement of manipulation, than perhaps in any other abdominal operation. The young infant is easily shocked. It is very important that the invagination should be reduced by pressure from the apex of the intussusception, so that it is pushed out from within instead of being pulled out. The appendix should not be removed unless absolutely necessary, and every effort made to abbreviate the operative procedure. When an irreducible invagination is found, the best procedure is to establish an artificial opening in the intestine and wait until a later date for the resection of the invaginated bowel.

Operative Treatment of Pyloric Obstruction in Infants

DR. WILLIAM A. DOWNES, New York: This report includes sixty-six cases in which operation was performed in five and one-half years. All presented the characteristic symptoms. A tumor was palpated in every case before operation, and this finding was verified at the time of operation. The theory best explaining the syndrome is that a true malformation is present at birth consisting of an abnormal thickening of the circular muscle of the pylorus, and to this is added an edematous condition ten days, or later, after birth. The edema probably results from the increased activity of the stomach necessary to force an increasing amount of food through the narrowed and elongated pyloric lumen. Gastro-enterostomy was performed in thirty-one of the sixty-six cases, operation in the remaining thirty-five being performed according to the method of Rammstedt. Of the thirty-one cases in which gastro-enterostomy was done there were eleven deaths, a mortality of 35 per cent. Of the twenty patients discharged as cured, two died afterward of gastro-enteritis, and one of diphtheria. The remaining seventeen are well and have developed normally. Roentgen examination shows the stomata working satisfactorily, and little or no bismuth passing through the pylorus. Of the patients dying in the hospital, a number began to vomit late in their convalescence; reoperation and necropsy offered no satisfactory explanation for the return of symptoms. After this unsatisfactory experience it was decided to give the partial pyloroplasty of Rammstedt a thorough trial. This operation has been done in the last thirty-five cases. In this series there were eight deaths, a mortality of 23 per cent. Of the twenty-seven discharged as cured, two have died since leaving the hospital. The remaining twenty-five are well extending over a period from a few weeks to one and one-half years. In no case has there been a return of the symptoms.

Colon Resection and Its Indications

DR. FRANK MARTIN, Baltimore: The operation should be undertaken only in obstinate and exaggerated cases, but should not be delayed so long as to bring about a toxemia that will of itself defeat the good effects of the operation. It is too hazardous to be undertaken purely for the relief of constipation alone. It is best in these cases to deal with the localized obstruction or the actual sharp angulation, which is presented in so many of these obstinate cases, rather than do a complete and total resection. In most of the cases a considerable portion of the colon is always left, the sigmoid, and in a good many cases a part of the descending colon, if necessary, which is sufficient to compensate for and take on the function of the portion that has been removed, and with this amount maintained, and free drainage established, intestinal toxemia ceases. I have not observed that thirst was complained of in any of my cases. Nor have I observed diarrhea as a fact, or any serious physiologic derangements in those cases that are done while there is still chance of recovery. The patients have gained in strength and in weight.

Use of Iodin in Combating the Peritonitides

DR. J. A. CRISLER, Memphis, Tenn.: My experience in the use of this drug leads me to believe that the infected fluids that are free in the cavity are at once sterilized, and that the absorption of toxins is immediately terminated for at least twenty-four hours. Also an outpouring of serum and new phagocytes is encouraged. Furthermore, there is an abundant serous drainage following, which is in excess of usual drainage common in other methods. This tends to disgorge and in a measure wash out the subserous, cellular tissues, which may receive some beneficient, antiseptic effect through a process of osmosis directly from the iodin that has come in contact with the inflamed serosa. Iodin has never appeared in the urine earlier than the eighteenth hour after its use in the abdomen, and then only in very small quantities. The height of elimination is attained at about the seventy-second hour. From Dec. 1, 1914, to Dec. 1, 1915, we operated in 678 abdominal cases with twenty-three deaths. In this number of operations we had 104 pus cases, slightly over 15 per cent.

Salpingitis Secondary to Appendicitis

DR. JAMES E. MOORE, Minneapolis: A number of years ago my attention was first called to the possibility of appendicitis being the cause of salpingitis. Since that time I have observed a number of cases that have confirmed my conviction that some cases of salpingitis are due to an infection from the peritoneal side caused by an appendicitis.

Pseudomucinous Cysts of the Appendix, and Ruptured Pseudomucinous Ovarian Cysts

DR. FRED WARREN BAILEY, St. Louis: I have seen two cases of pseudomucinous cysts of the appendix, one case complicated by ruptured pseudomucinous ovarian cyst. There is no record of malignancy following ruptured pseudomucinous cysts of the appendix, but the danger is far greater in those of ovarian origin. Protection against such tumors lies in early exploration of all surgical abdominal lesions.

V. 191

Genital Elephantiasis Following Extirpation of Inguinal Glands

DR. J. T. WINDELL, Louisville, Ky.: One of my two patients presented an enormous elephantiasic enlargement of the entire scrotum and penis which he said began early in 1910. The scrotum measured 16 inches in circumference; the penis was 11 inches in length, and at its largest part 12 inches in circumference. The patient contracted syphilis in 1903, and according to his statement, he has been under antisyphilitic treatment continually since then. Two surgical operations had been performed for the removal of enlarged and infiltrated inguinal glands, one in 1905, the other in 1909, but for what condition the patient did not know. Dense fibrous tissue scars, adherent to the underlying structures, were present in both inguinal regions. The scar tissue was more abundant in the left groin, which probably explained the greater scrotal enlargement on the corresponding side. Local treatment consisted of an appropriate suspensory apparatus and antiseptic dressings. At no time was there any acute inflammation of the penile tissues; but the scrotum, owing to continuous exudation of lymph from its surface, at times became infected and exhibited evidence of acute inflammation, which was relieved by suitable antiseptic applications.

In the second case, three months after bilateral inguinal adenectomy for enlarged and suppurating glands, probably of tuberculous origin, the patient presented an immense hypertrophy of the penis. It was unaccompanied by redness or pain, and the scrotal tissues were apparently uninvolved. Several deep scars were present in each groin from the previous operations.

WESTERN SURGICAL ASSOCIATION

Twenty-Fifth Annual Meeting, held at Des Moines, Iowa, Dec. 17-18, 1915

The President, DR. JOSEPH RILUS EASTMAN, Indianapolis, in the Chair

Ascending Renal Infection

DR. DANIEL N. EISENDRATH and DR. JACOB V. KAHN, Chicago: We have just completed a series of twenty-seven experiments on dogs and rabbits which demonstrate that infection travels from the bladder to the kidneys and perinephritic tissue by way of the lymphatics in the wall of the ureter. We have attempted to imitate the environment as found in the human being by injecting an emulsion, made by mixing the scrapings of agar slant cultures of the organisms commonly found in urinary infections with sterile salt solution, into the bladder of animals. Paraffin sections were taken from a number of places in the bladder and kidney, and were studied serially. In order to trace the infection upward, along the ureter every portion of the latter was cut longitudinally as well as serially, so that no areas would be omitted. In the early stages of infection the infiltration is found in the submucous layer of the bladder, and is especially dense around the smaller vessels in this layer. The connecting link between the lymphatics of the ureter and those within the kidney is along the lymphatics of the subareolar tissue which surrounds the blood vessels as they enter the kidney tissue. They follow the organ itself, the course of the intertubular, periglomerular and perivascular lymphatics.

Accurate Localization of Foreign Bodies in the Chest, and the Method of Their Removal

DR. EMIL G. BECK, Chicago: In seven cases I removed foreign bodies from the chest cavity, first localizing them by means of stereoscopic roentgenograms. Wire localizers were placed on the skin within the suspected vicinity of the foreign body. The foreign bodies were removed through external operation. In a case of lung abscess from which a pin tack had been removed, I implanted a flap of skin 5 inches long into the lung abscess cavity, thus keeping it open to permit the cauterization with actual cautery of the bronchi which lead into the compartments of this abscess cavity.

DISCUSSION

DR. LAWRENCE W. LITTIG, Davenport, Iowa: There is one important point to remember, and that is, that foreign bodies which have passed through the mouth frequently are followed by a period of calm and quiet. Many cases have come to the postmortem table with a diagnosis of tuberculosis or abscess of the lung in which a stereoscopic examination was not made, and in which a correct diagnosis was not arrived at because of the deceptive period of calm. Whenever lung trouble of any kind is discovered, and disturbance follows the swallowing of a foreign body, a Roentgen examination should be made.

DR. CHARLES H. MAYO, Rochester, Minn.: I recall cases in which foreign bodies, like tacks and nails, have been swallowed and retained for years, and then abscesses would form, and when an abscess forms, an external operation with drainage is the best method to pursue. A foreign body will stay in a bronchus for three or four years and not produce abscess. The bronchus will contract above it. I have seen Dr. Plummer remove a foreign body with the aid of a bronchoscope after it had been present four years and after two unsuccessful surgical operations for its removal.

DR. L. L. MCARTHUR, Chicago: Many of these cases of chronic abscesses, called frequently chronic empyemas, for which resection of the ribs and collapsing of the wall are made without cure, now have some hope of cure by Dr. Beck's method of marsupialization of the abscess cavity, so that one can see the connection between the bronchus and the abscess cavity, destroying the mucous membrane, and curing the abscess cavity permanently.

DR. WILLIAM FULLER, Chicago: I should like to ask Dr. Beck the object of implanting skin so deeply in the lung, and what becomes of it in the final healing of the wound.

DR. E. G. BECK, Chicago: The object of implanting skin is to keep the cavity open for treatment, because otherwise it would close, and even the insertion of a tube would not keep it open. As to what becomes of it, there will be a long dimple of skin growing in afterward. When I destroy all the mucous membrane of these bronchi, they close up.

Thrombo-Angiitis Obliterans (Intermittent Claudication)

DR. LEWIS L. MCARTHUR, Chicago: There occurs in the relatively young in cases not of diabetic, syphilitic or angioneurotic types, a spontaneous gangrene termed thromboangiitis by Buerger, and spontaneous gangrene of the young by Koga, a common occurrence among his countrymen, and almost limited in this country to the Jewish race. Mayesima determined the constant high viscosity of the blood in all cases of gangrene. Acting on this, Koga confirmed Mayesima's findings and reduced the viscosity by diluting the blood with physiologic solutions (Ringer's). Cases, which in the past were invariably condemned to high amputation, he succeeded in curing by the simple expedient of hypodermoclysis of a sufficient quantity of Ringer's solution and over a sufficient period of time to reduce the viscosity of the patient's blood. The testimony of all those who have faithfully carried out Koga's recommendation verify his claims.

Dislocation of the Knee

DR. JOSEPH RANSOHOFF, Cincinnati: A man fell from a height of approximately 48 feet, sustaining an anterior and external dislocation of the knee, with rotation to an angle of 90 degrees, and also a fracture of the lower jaw. The circulation of the leg was interfered with, although pulsation could be felt in both dorsalis pedis and posterior tibial arteries. The dislocation was easily reduced, and the functional result at the end of six weeks practically restored. In a large traumatic service of the Cincinnati General Hospital, this was the third case which had been admitted in twenty-seven years. Such dislocations are easy of reduction and are perhaps often reduced by the first aid Samaritans before patients are admitted to the hospital, or seen by the surgeon. Reports of not more than 250 cases can be collected from the literature. The gravity of the injury depends on the damage done to the popliteal vessels. Of this there was a suspicion in the case presented, but evidently there was only a temporary pressure on the vein. In many instances gangrene followed rupture of the artery or vein, or both.

DISCUSSION

DR. EARL R. HARE, Minneapolis: I wish to report a case of partial posterior dislocation of the knee joint due to severe traumatism of the leg and rupture of the anterior crucial ligament. I do not believe it is possible to have a dislocation of the knee joint in any direction without laceration of the anterior crucial ligament. This ligament prevents forward dislocation of the leg; the posterior crucial ligament prevents posterior dislocation, so that I believe these cases of injury to the knee joint are more common than we have been led to believe.

DR. ALBERT E. HALSTEAD, Chicago: I have seen two cases of backward dislocation of the knee joint. Last fall I saw a man who claimed that an automobile had passed over both his legs. He had an anterior dislocation of one knee, with gangrene of the leg from the rupture of blood vessels. The physician in charge said the man had dislocation of both knees; that he had reduced the other dislocation and had failed to reduce the one in which gangrene occurred. On account of swelling he did not recognize the nature of the injury. The knee had been dislocated because of great relaxation and free mobility of the joint. Apparently the man could put the knee in almost complete dislocation without any difficulty.

Foreign Bodies in the Urinary Bladder

DR. E. STARR JUDD, Rochester, Minn.: The seven cases include (exclusive of pieces of broken catheter, or surgical instruments) three hairpins, a 0.22 rifle bullet, a piece of chewing gum, a fragment of bone, and a part of a jack-knife blade. Bodies lodged in the bladder are prone to incrustation from salt deposits, though some materials, as bone, seem to be immune. The stone with the foreign body as a nucleus is usually of considerable size before the patient's symptoms compel him to seek the aid of a physician. Pain and burning on micturition, pus and sometimes blood, frequency or retention and marked urgency are frequently the symptoms complained of. Attention is called to the fact that foreign objects found in the bladder have usually gained entrance through the urethra, though in two cases, the bone and jack-knife blade, this could not have occurred. There is no question that these foreign bodies got into the bladder through the side wall, producing few, if any, symptoms, during the time they were passing in, though very careful examination of the inner lining of the bladder at the time of the operation did not reveal any scars or permanent injury to the bladder wall.

Nails and Screws in Joint Surfaces

DR. ARTHUR T. MANN, Minneapolis: Nails and screws are tolerated in joint surfaces in man as in the experimental cases in dogs. They remain firmly embedded in every specimen. We lost no patients. There was an occasional infection in the skin, but no joint was infected. Gloves were used in most cases, but bare hands in some of them. All specimens were recovered. In every case in which nails and screws have projected out of the joint surface, the condyle has overgrown to meet the projection. In some cases there was slightly more than a projection. That is Nature's response to the rigid metal projecting into the joint. The overgrowth in the condyle is apparently entirely of bone. Practically all of the covering of soft tissue over the nails and screws has reverted to the connective tissue type and is not entirely of the cartilaginous type, so that we have some specimens 6 months old. In each case the groove made by the projecting nail or screw has gradually filled up as the projection has become less and less by the overgrowth of the condyle.

Osteomyelitis Involving the Hip Joint, a Condition Heretofore Designated Acute Epiphysitis

DR. JAMES E. MOORE, Minneapolis: The disease, which begins at or near the epiphyseal line, described by Macnamara under the name epiphysitis, is an acute osteomyelitis. The symptoms all point toward an acute inflammation of the hip joint. There are excruciating pain and high temperature, followed by deformity and swelling. There is apt to be an early separation of the epiphysis, with rapid destruction of the hip joint. The treatment consists of free incision and drainage. The opening should be made large enough to admit a finger, in order to ascertain whether or not the epiphysis is separated or not. If separation has taken place, the epiphysis should be removed at once. This is a grave disease, but with prompt treatment I have seen patients recover who were seemingly beyond help. This disease does not begin in the epiphysis, but in the neck of the femur. It may begin in the shaft of the femur. The reason the name "epiphysitis," originally suggested by Macnamara over twenty-five years ago, still is in vogue is that osteomyelitis is quite rare in this location, and the diagnosis is not made until the joint has become involved and the epiphysis has separated from the neck. When the joint is opened, the floating epiphysis at once attracts the operator's attention, and the original opening into the neck of the femur can easily be overlooked.

Some Experiments with Rubber Gloves

DR. CARL E. BLACK, Jacksonville, Ill.: How much does the use of rubber gloves interfere with the tactile sense? I have made 144 observations on six blind pupils who read entirely with their fingers. The average time in which the pupils could read the text with the bare fingers was forty-eight seconds, while the average time when the hands were covered with rubber gloves of medium weight and well fitting was seventy seconds. With the hands covered with oil and then the gloves put on, the time was reduced to sixty-eight seconds, while with the gloves put on with the hands wet the time was still further reduced to sixty-five seconds. The average time for reading with gloves, under all conditions, was seventy seconds. In one observation an excess of powder was put in the glove, while in another observation very loose fitting gloves were used. With loose, ill fitting gloves the average time for reading 100 words was eighty-six seconds. These observations present some interesting facts about the gloves, and show the difference between the carefully fitted medium weight gloves and the loose, badly fitting thick gloves. They also emphasize the fact that gloves put on with the hands wet impair the sense of touch less than gloves put on dry.

A Paradox in Cancer

DR. C. E. TENNANT and DR. CASPER F. HEGNER, Denver: Notwithstanding the long and continued presence of carcinoma extending over a period of ten years, and two operations for recurrence; notwithstanding the possibility of metastasis and a constitutional predisposition to carcinoma, and the coexistence of a very chronic ulcer at a site most favorable to a development of carcinoma, and that too during the cancer decades of life, carcinoma did not develop.

Since the age of 16 years the patient, now 58, had been having attacks of stomach trouble with nausea and vomiting. These had been severe and almost constant since 1905. When 23 years of age, while nursing her infant, the nipple of the left breast become sore, and abscess developed, which was lanced through the nipple. In 1900, twenty-one years after the abscess, the same nipple became sore again. This continued until 1907, when the condition was diagnosed as Paget's disease and treated with the Roentgen ray without improvement. In March, 1910, there was a superficial pigmented and fibrosed ulceration. The nipple and ulcer area were then excised. In December, 1911, twenty-one months after the nipple excision, the patient returned with a mass in the upper inner quadrant of the same breast. This was the size of a hen's egg and adherent to the skin and deeper structures. A complete operation was made, removing the breast, muscle, axillary and supraclavicular lymph glands. Dr. R. C. Whitman examined sections of this tissue and reported scirrhous carcinoma with glandular involvement. Four years after this operation the patient is free from recurrence. In April, 1915, she presented herself for stomach trouble which had existed since she was 16 years old. Pain and distress were almost constant, vomiting frequent and a loss of 10 pounds in weight. At operation, the pyloric end of the stomach, the pylorus and the first part of the duodenum were fused into a firm mass firmly adherent to the surrounding structures. The stomach (pyloric end) and the first

V. 191

portion of the duodenum were resected. The mass was excised in wide limits and a posterior gastro-enterostomy was performed. The history and the appearance of the tissues strongly indicated carcinoma, and at the time its presence was considered certain. Sections examined by Dr. Hegner proved this last lesion to be one of chronic duodenal ulcer with encroachment on the pyloric end of the stomach.

Further Study of Malignant Disease of the Ovaries

DR. MILES F. PORTER, Fort Wayne, Ind.: As a result of large experience, I am inclined to disagree with those who advise the removal of a healthy ovary because its companion is cystic. This should never be done except perhaps in women near the menopause. Fluid in the abdomen, which cannot otherwise be accounted for, should lead to exploratory operation. A negative laboratory report should not be allowed to outweigh a positive diagnosis of malignancy based on the clinical history and examination of the gross specimen. On the other hand, many tumors will show little or no signs of malignancy clinically which on microscopic examination are found to be unquestionably malignant. I have seen several malignant ovarian tumors without ascites. Rapidly growing tumors are most likely to cause ascites. Ascites does not mean involvement of the peritoneum. Malignant ovarian tumors may cause amenorrhea, menorrhagia or metrorrhagia, or may exist without interfering with the menstrual function. In some cases there is a history of amenorrhea followed by menorrhagia, and vice versa. A bloody vaginal discharge years after the menopause has been noted. Irregularity of the menses is more common in malignant than in nonmalignant tumors of the ovary. I have found one case supporting Wermuth's statement that sarcoma in the young may cause premature signs of puberty. This was in a girl aged 6 years, who menstruated regularly. Operation revealed a vascular sarcoma and a uterus of adult size.

DISCUSSION

DR. LEONARD FREEMAN, Denver: The case reported by Dr. Tennant is interesting, but neither unusual nor paradoxical. It is the nature of cancer to occur in only one spot as a primary growth in any given individual at any given time.

DR. CHARLES H. MAYO, Rochester, Minn.: Carcinoma is most common in the stomach, yet with a continuous muscularis and continuous mucosa, it is rare to find carcinoma of the duodenum. The process will metastasize in the liver, the glands, the colon and the pancreas, but, as a rule, it will leave the duodenum alone.

DR. DANIEL N. EISENDRATH, Chicago: A woman was sent to me with retraction of the nipple which had existed for three months with no induration to be felt at first around the nipple. Immediately surrounding the nipple there was a light yellowish parchment induration which looked like elephantiasis of the leg. Believing in the theory that the primary affection in Paget's disease is a ductile carcinoma with secondary involvement of the skin, I made a diagnosis of primary carcinoma of the ducts, with secondary involvement of the skin, the first stage of Paget's disease. The breast was removed completely. There was tremendous edema of the skin, with typical vacuolated cells. The ductile carcinoma radiated from the nipple, and was of such a nature that it was impossible to feel this mass because it was so deep in the breast.

DR. J. W. ANDREWS, Mankato, Minn.: Solid tumor of the ovary is very rare. I have encountered but one case. That tumor weighed 4 pounds, and on section proved to be a fibroid.

DR. DONALD MCCRAE, Council Bluffs, Iowa: When a woman has Paget's disease or an old ulcer of the nipple, without involvement of the glands of the axilla, I should not hesitate to remove the breast. If we are to get ahead of cancer of the breast, we must remove the disease early.

DR. WILLIAM T. REYNOLDS, Kansas City, Mo.: I was forced to operate on a woman, aged 32, for acute intestinal obstruction produced by a rapidly growing tumor occupying the entire pelvis. She had a villous carcinoma of the ovary on both sides, and an adenocarcinoma at the junction of the descending colon and sigmoid.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

December, 1915, XXXVI, No. 12, pp. 567-612

1 Control of Cancer. R. Derby, New York.
2 *Blood Coagulation in Infancy. H. L. K. Shaw and F. J. Williams, Albany.

2. **Blood Coagulation in Infancy.**—Shaw and Williams made examinations in 108 healthy infants under 2 years of age by the Dale and Laidlaw method and found the determinations were between one minute fifteen seconds and one minute forty-eight seconds, and the average coagulation time was one minute thirty seconds, which is a slightly shorter time than in adults. They observed no difference in the clotting time before and after eating, nor at different periods of the day. There was no difference in blood taken from various parts of the body: ears, fingers or toes. They found that the first drop clotted somewhat more quickly than succeeding ones and a slight hastening of the coagulation time was noted when the tissues surrounding the needle prick was squeezed and manipulated to force out the blood. With the Boggs instrument they could find no appreciable difference in the clotting time whether the glass surface was warmed or cooled before applying the blood. The results by both the Dale-Laidlaw and Russell-Brodie methods were remarkably constant and Shaw and Williams believe they have established a normal coagulation time for infants and hope in a later communication to compare these results with those obtained in various disease conditions.

American Journal of Diseases of Children, Chicago

January, XI, No. 1, pp. 1-84

3 *Nature and Quantitative Determination of Reducing Substance in Normal and Pathologic Cerebrospinal Fluid. O. M. Schloss and L. C. Schroeder, New York.
4 *Familial Syphilis. P. C. Jeans, St. Louis.
5 Some Interesting Facts Plainly Brought Out by Chart Method of Studying and Managing Cases of Diabetes Mellitus in Children. D. H. Sherman, Buffalo.
6 *Etiology of Pachymeningitis Hemorrhagica Interna in Infants; Report of Case. A. B. Schwartz, Chicago.
7 *Parapneumonic Empyema. L. Gerdine, Chicago.
8 *Nutritive Value of Boiled Milk. A. L. Daniels, S. Stuessy and E. Francis, Madison, Wis.
9 Congenital Syphilis, Simulating Mongolism, in One of Twins. F. Van Der Bogert, Schenectady, N. Y.
10 Case of Traumatic Rupture of Left Kidney. C. J. Bloom and R. E. Stone, New Orleans.
11 Recent Advances in Anatomy, Physiology and Pathology of Childhood. J. B. Holmes, Baltimore.

3. **Reducing Substance in Normal Cerebrospinal Fluid.**—The observations cited by Schloss and Schroeder indicate that there is no basis for the belief that the reducing substance in normal cerebrospinal fluid is pyrocatechin. Moreover, their results indicate that this agent is a monosaccharid, probably dextrose. The results for normal fluids were obtained from a study of material from forty-five infants and children on whom lumbar puncture was done as a diagnostic procedure. There were a number of cases of meningism, but all fluids showed a normal cell count and no increase of globulin (Kaplan, Noguchi). The maximum amount of sugar found in normal cerebrospinal fluid was 0.139 per cent., the minimum 0.054 per cent. According to Schloss and Schroeder the reducing substance in cerebrospinal fluid is a fermentable, dextrorotatory sugar, probably dextrose. In infants and children free from meningeal disease the cerebrospinal fluid sugar ranges from 0.05 to 0.134 per cent. (dextrose), approximately the same figures which obtain for blood sugar. There is no decrease in the reducing power of the cerebrospinal fluid in meningism. A large proportion of the cases of tuberculous meningitis show a decrease in the sugar content of the cerebrospinal fluid at some stage of the disease. In a few cases, however, the sugar is normal at all times or diminished but slightly. A decrease only is of diagnostic value.

4. **Familial Syphilis.**—It does not seem likely to Jeans that germ transmission of hereditary syphilis ever occurs. He thinks it is highly probable that all the mothers of syphilitic children have been infected with syphilis. Of eighty-five mothers of syphilitic children 86 per cent. gave positive Wassermann reactions. All of the remaining cases but six gave a history of infection or treatment, or both. Five of these six patients were examined at least ten years after the birth of their last syphilitic children and the infection is probably dying out. Of the mothers 87 per cent. deny all knowledge of the infection. The mothers are for the most part infected during the latent stage of the father. Of 331 pregnancies in 100 families, 30 per cent. were abortions, 9 per cent. stillbirths, 61 per cent. living births. Of the living births 24 per cent. had died. Of those living 80 per cent. had syphilis. Of the total pregnancies 90 per cent. were presumably syphilitic and although 10 per cent. seem free from syphilis, there is no proof that they all are. The total syphilis in these families amounts to 93 per cent. of the entire family. For the most part these families followed Kassowitz's rule; namely, decreasing grades of infection in the children. In case of syphilitic mothers bearing non-syphilitic children, Jeans thinks it is probable that the infection in the mother is localized in places in which it is not readily transmitted. The idea that there are different strains of spirochetes receives some support from these families. Transmission to the third generation, though not proved, is distinctly an occasional probability.

6. **Pachymeningitis Hemorrhagica Interna in Infants.**—Pachymeningitis hemorrhagica as it occurs in infancy Schwartz believes is an infectious disease, which may be caused by the meningococcus or other organisms. The case reported is one in which the meningococcus was demonstrated in the spinal fluid on several separate examinations.

7. **Parapneumonic Empyema.**—In a series of fifteen cases of typical lobar pneumonia or bronchopneumonia, in children under 4 years of age, exploratory punctures of the chest were made by Gerdine as early as possible in the course of the disease. The needle was put in over the area of greatest impairment as shown by physical signs and roentgenograms. In only one of the cases in which fluid was not found at the first puncture, were subsequent trials made, and no fluid was found until the twenty-second day, when a typical metapneumonic empyema was found. In six of these fifteen cases (40 per cent.) fluid was recovered by puncture before the seventh day of the disease, always before the crisis. Five of the six fluids were opaque and yielded a large clot. They contained a large number of cells, between 70 and 80 per cent. polymorphonuclear leukocytes. No micro-organisms could be demonstrated in them by smears. Cultures on agar, milk, bouillon, and with some on blood-agar, gave no growths. Inoculations into mice were without harmful results, except in one case in which the mouse died within twenty-four hours, but no lesions were found and no organisms could be grown from its heart's blood or serous cavities. In all five cases the fluids were absorbed spontaneously, as was shown by later punctures and roentgenograms. The clinical course of the disease was never noticeably affected by the presence of these fluids.

8. **Value of Boiled Milk.**—The results obtained by the authors point to the conclusion that milk heated to the boiling temperature or thereabouts is an inadequate food. Rats fed on boiled milk grew to about half their normal size. Although they have been able to keep these experimental animals for many months on boiled milk, in no case have they got reproduction, nor have any of the animals reached the normal weight for adult rats. Milk which is kept at the boiling temperature for forty-five minutes is no less efficient as a food than milk boiled for much shorter periods—ten minutes or one minute. The chemical changes which make heated milk an inadequate food are brought about at the boiling temperature or thereabouts. The value of pasteurized milk as a food, therefore, will depend on the temperature to which it is heated during the pasteurization process. Heating milk to a higher temperature than boiling (114 C.) makes it even less valuable as a food.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

December, 1915, III, No. 6, pp. 311-366

12 Influence of Tropical Medicine on General Medicine. H. J. Nichols, U. S. Army.
13 Accomplished Tasks of Tropical Medicine. J. M. Swan, Rochester, N. Y.
14 *Few Cases of Blackwater Fever and of Peculiar Enterocolitis. E. F. Otis, La Romana, Dominican Republic.
15 *Tuberculosis in Negro of Panama Canal Zone. H. C. Clark, Ancon, C. Z.

14. **Cases of Blackwater Fever.**—Otis describes an interesting syndrome that appeared in Santo Domingo in the past year without determining symptoms and of virulent nature. The only cases he has met thus far have occurred in children between the ages of 5 and 10 years. One case began with a slight indisposition for one day; however, these attacks usually began abruptly without any premonitory symptoms. The patient becomes nervously agitated and it may pass on to a convulsion. The fever sometimes rises to 104 F., and above, and remains there more or less constantly for from three to six days. It is not a pure enteritis. The bowels have a marked tendency to obstipation. It is apparently not a food toxemia. In none of the more typical cases had there been digressions from the regular foods taken by the other members of the family. Nor did it particularly select weaklings, for, excepting one boy with malnutrition, all were exceptionally strong. Some were of poor parents; others lived in comfortable homes. It was essentially toxic; and resulted in an almost complete cessation of peristalsis. This was, with difficulty and only partially, overcome by doses of eserin in combination with various laxative procedures. It was enteric in that such bowel movements as appeared were completely surcharged with mucus. All cases had a distinctive odor to the bowel movements similar to that of fresh beef. The urine was uncommonly free from microscopic abnormalities; also the feces. This affection is also clinically interesting as to its termination. The fever may be raging for hours at 104 F. or above, in spite of a reasonable amount of antipyretic measures. Sometimes, after days, it drops to about 100 F. About this time the patient can only with difficulty be persuaded that it is necessary to remain in bed. He feels well; but the low subnormal temperature usually continues for many days. On exertion the patient discovers that his physical endurance is at a low ebb.

15. **Tuberculosis in Negro.**—Tuberculosis is a common disease on the Isthmus of Panama. In a period of about five years it has led all other single factors by a wide margin as a cause of death, if the anatomic records at Ancon can be taken as a safe index. Based on an examination of the past and present anatomic records, Clark says, it would appear that the disease is increasing among the negro population. The duration of the course of tuberculosis in the negroes of this region can be better represented by months rather than by years as is so frequently the case in the white race. The disease is more often widely disseminated in the negro than in the other races of this region. There is but little evidence offered, in the study of this material of an arrested or healed process in the negro, yet such findings are frequent in the other races. Overcrowding, poverty, ignorance and race appear to be important factors in the propagation of the disease in this region. Much evidence found indicates that many of the cases of tuberculosis in this group acquired their infection on the Isthmus. Bone, joint and cutaneous types of tuberculosis are less common here than in the United States. The pulmonary type of the disease, becoming rapidly disseminated, is the common form occurring in the negroes on the Isthmus.

Boston Medical and Surgical Journal

Dec. 30, 1915, CLXXIII, No. 27, pp. 979-1018

16 Foot Strain and Other Common Foot Defects. H. W. Marshall, Boston.
17 Prognosis of Incipient Senile Cataract. D. W. Wells, Boston.
18 Radical Treatment of Peritonsillar Abscess by Tonsillectomy During Acute Stage of Disease. H. A. Barnes, Boston.
19 Significance of Changes in Cellular Content of Cerebrospinal Fluid in Neurosyphilis. H. C. Solomon and H. O. Koefod, Boston.

Cleveland Medical Journal

November, 1915, XIV, No. 11, pp. 713-792

20 Smaller Nursing Districts for All Public Health Work, vs. Larger Districts for Specialized Work. H. J. Gerstenberger, Cleveland.
21 Medical Inspection of School Children. E. A. Peterson, Cleveland.
22 Protection of Cleveland's Food Supply. F. V. Ball, Cleveland.
23 Rôle of Pure Milk in Prevention of Disease. A. F. Furrer, Cleveland.
24 Welfare Work in Modern Factory. W. A. Haldy, Cleveland.
25 Safeguarding Quality of Medicines. J. F. Woolsey, Cleveland.

Colorado Medicine, Denver

December, 1915, XII, No. 12, pp. 353-384

26 Senile Parenchymatous Hypertrophy of Breast. C. A. Powers, Denver.
27 Evolution and Present Status of Mental Therapeutics. E. J. A. Rogers, Denver.
28 Five Cases of Relapsing Fever Originating in Colorado, with Positive Blood Findings in Two. C. N. Meader, Denver.
29 *Use and Abuse of Drugs. W. T. Little, Canon City.
30 Immunity in Tuberculosis. G. B. Webb and G. B. Gilbert, Colorado Springs.
31 Triumphs of Preventive Medicine. J. W. Amesse, Denver.

29. **Use and Abuse of Drugs.**—Little summarizes his paper as follows: Pharmacology is a branch of medical science second to none other in importance. It is essential to know disease, its cause and its natural history before we can successfully control it; but its prevention and cure is the ultimate purpose of all our efforts. By physical and chemical means we endeavor to restore to their normal function organs damaged by disease, and only when their functions are destroyed should we cut them away. Drugs are of the greatest value in modifying and restoring function, but they should be used with a precision that can come only from an exact knowledge of their action. The pharmacologic laboratories are gradually weeding out those drugs of uncertain value, as the expectorants, the hypophosphites, viburnum, strychnin, etc.; and hard as it may be to part with old friends, it is our duty to do so if we are to maintain the highest state of medical efficiency. A knowledge of the physiologic action of a drug is essential to its correct use. We should know that our drugs are both active and pure. We should give drugs only when they are clearly indicated. In judging the worth of a remedy always maintain an attitude of scientific skepticism.

Georgia Medical Association Journal, Augusta

December, 1915, V, No. 8, pp. 171-192

32 Country Physician. J. R. Robins, Siloam.
33 Physician as First Aid in Detection of Crime. C. W. Gould, Atlanta.
34 Final Report of Work Leading to Eradication of Uncinariasis in Georgia. A. G. Fort, Atlanta.
35 Commercialism of Pharmacy and Reason. A. D. Little, Thomasville.
36 Possible Danger of Roentgen Ray in Latent Pellagra. G. M. Niles, Atlanta.
37 Hygiene vs. Medicine in Treatment of Skin Diseases. C. Swanson, Atlanta.

Illinois Medical Journal, Chicago

December, 1915, XXVIII, No. 6, pp. 401-472

38 Diphtheria Treatment in General Practice. R. R. Ferguson, Chicago.
39 Value and Limitations of Schick Diphtheria Reaction in General Practice. A. Levinson, Chicago.
40 Value of Specific Treatment in Croupous Pneumonia. J. L. Miller, Chicago.
41 Diagnosis and Medical Treatment of Exophthalmic Goiter. S. R. Pietrowicz, Chicago.
42 Goiter and Indications for Its Treatment. A. A. O'Neill, Chicago.
43 Serum Treatment for Physiologically Defective Thyroids, Clinical Reports. R. Watkins, Chicago.
44 Better Milk at Better Price. C. J. Whalen, Chicago.
45 Enlarged Public Health Activities in Illinois and Relation of Medical Profession Thereto. C. St. C. Drake, Springfield.
46 Reciprocal State Laws Regarding Marriage of Diseased Individuals and Mental Defectives. A. M. Corwin, Chicago.
47 Intraspinal Therapy of Syphilis of Nervous System. R. B. H. Gradwohl, St. Louis.
48 Loss and Waste from Inadequate and Inconsistent Planning of State Hospitals. R. Dewey, Wauwatosa, Wis.
49 Interstitial Gingivitis and Pyorrhea Alveolaris. E. S. Talbot, Chicago.
50 Cancer. E. C. Franing, Galesburg.
51 Acute Frontal Sinusitis. R. H. Good, Chicago.
52 Pyelonephritis. F. S. Cary, Chicago.
53 Sugar Treatment of Ozenal Rhinitis. C. B. Younger, Chicago.
54 Retrospect. C. F. Smith, Kankakee.

Journal of Experimental Medicine, Baltimore

January, XXIII, No. 1, pp. 1-147

55 *Immunologic Studies in Pneumonia. R. Weil and J. C. Torrey, New York.
56 *A Skin Reaction in Pneumonia. R. Weil, New York.
57 *Experimental Study of Effect of Cholecystgastrostomy on Gastric Acidity. E. G. Grey, Boston.
58 Pathologic Study of Syphilitic Aortitis and Its Serology. J. H. Larkin and I. J. Levy, New York.
59 Etiology of Rat-Bite Fever. F. G. Blake, Boston.
60 *Antiblastic Immunity. A. R. Dochez and O. T. Avery, New York.
61 Atheroma and Other Lesions Produced in Rabbits by Cholesterol Feeding. C. H. Bailey, San Francisco.
62 Relation of Spleen to Blood Destruction and Regeneration and to Hemolytic Jaundice. Changes in Blood Following Diversion of Splenic Blood from Liver. Control Study of Effects of Splenectomy. E. B. Krumbhaar, J. H. Musser, Jr., and M. M. Peet, Philadelphia.
63 Id. Resistance to Hemolytic Agents of Dogs in Which Splenic Blood Has Been Diverted from Liver. E. B. Krumbhaar and J. H. Musser, Jr., Philadelphia.
64 Quantitative Analysis of Influence of Size of Defect on Wound Healing in Skin of Guinea-Pig. K. C. Spain and L. Loeb, St. Louis.
65 Intestinal Obstruction. G. H. Whipple, F. H. Rodenbaugh and A. R. Kilgore, San Francisco.
66 *Icterus. C. W. Hooper and G. H. Whipple, San Francisco.

55. **Immunologic Studies in Pneumonia.**—The serum derived from human cases of pneumonia has been used by Weil and Torrey to sensitize guinea-pigs passively. As antigen an autolysate of a pneumococcus culture was employed. By means of Dale's method it has been possible to show with considerable regularity that the blood contains sensitizing antibodies during the course of pneumonia, but none after the crisis. Patients suffering from other diseases have failed to give this reaction, as have also normal individuals.

56. **A Skin Reaction in Pneumonia.**—Weil describes the results observed when pneumococcus antigen, prepared in the same way as for the anaphylactic experiments was injected intracutaneously into a series of pneumonia patients and into controls. The autolysate was kept in the ice-box, and was never used more than one week aftere its preparation. During this period no change could be detected in its effects when injected into the skin. The amount injected varied from 0.1 to 0.2 c.c. depending on the texture of the skin. The injection is immediately followed by a superficial, ill defined, cutaneous blush. This is present in pneumonia cases as well as in controls. It is believed to be due to a local irritant effect, and is not considered as a true reaction. The subsequent course of events at the site of injection varies under different circumstances. The superficial erythema may fade within a few hours, and nothing further may develop. Such a course is denominated as an absence of reaction, and the case is called negative. On the other hand, within the twenty hours following the injection further changes may occur at the site of injection. A fairly well circumscribed area of erythema, with slight infiltration and elevation of the skin surrounding the point of puncture, may develop. If the infiltration is marked, a true papule results. These changes may persist for forty-eight hours or more. They are described as a reaction and a case presenting this is called positive. During the course of the disease the skin presents no reaction to the injection. After the subsidence of the disease, a considerable percentage of the cases do present a reaction. From a diagnostic standpoint, the reaction has no significance. The fact that it is absent during a pneumonic process does not sufficiently establish the bacterial etiology of the disease.

57. **Effect of Cholecystgastrostomy on Gastric Acidity.**—The purpose of the investigations reported by Grey has been to determine the effect of bile on the acid chyme of the stomach. By means of a cholecystgastrostomy with ligation and division of the common bile duct in six dogs the bile was diverted from the duodenum into the stomach. The secretion of gastric juice and the acidity of the gastric contents throughout the period of digestion were followed before and after the anastomoses. For this purpose three of the dogs were provided with Pawlow stomach pouches. In the three remaining animals the test meals were recovered by using apomorphin injections. The results from the two

series of experiments agree. They indicate, at least with a diet of meat and water, that bile when it is present in the stomach throughout the course of digestion has no appreciable effect on the acidity of the gastric contents. While the anastomosis of the gallbladder to the stomach occasioned some temporary anorexia and vomiting in two of the dogs, the four remaining animals bore the operation well. Three or four weeks subsequent to the operation the digestion and the nutrition appeared normal in each instance. Postmortem examinations revealed no pathologic changes in the gastric mucosa.

60. **Antiblastic Immunity.**—Dochez and Avery state that antipneumococcus serum possesses the power of inhibiting for a certain period of time the multiplication of pneumococci. It also has the capacity of inhibiting the proteolytic and glycolytic functions of pneumococci. This power is acquired for the first time or appears in increased amounts in human serum at the time of crisis in lobar pneumonia. The retardation of bacterial growth is thought to be dependent on the inhibition of metabolic function due to the presence of antienzymotic substances in antipneumococcus serum. To this phenomenon the authors have applied the term antiblastic immunity.

66. **Icterus.**—The experiments made by Hooper and Whipple show that hemoglobin can be changed to bile pigment within the pleural or peritoneal cavities. This transformation can usually be detected after eight hours, and the amount can often be estimated quantitatively after an interval of twenty-four hours. These experiments demonstrate the importance which may attach to extrahepatic bile pigment formation. That bile pigments can be formed without direct liver activity is established beyond doubt. The authors suggest that it is highly probable that endothelium as well as mesothelium (serous cavities) can transform hemoglobin into bile pigment. It is possible that this property may reside in cell protoplasm in general.

Journal of Infectious Diseases, Chicago

January, XVIII, No. 1, pp. 1-128

67 *Use of Brilliant Green for Isolation of Typhoid and Paratyphoid Bacilli from Feces. C. Krumwiede, Jr., J. S. Pratt and H. I. McWilliams, New York.

68 *Mechanism of Abderhalden Reaction with Bacterial Substrates. G. H. Smith and M. W. Cook, Glenolden, Pa.

69 *Nonspecific Complement Fixation by Normal Rabbit Serum. J. A. Kolmer and M. E. Trist, Philadelphia.

70 *Nonspecific Complement Fixation by Normal Dog Serum. J. A. Kolmer, M. E. Trist and G. D. Heist, Philadelphia.

71 Influence of Splenectomy and Anesthetics on Nonspecific Complement Fixation Sometimes Shown by Normal Rabbit and Dog Serums. J. A. Kolmer and R. M. Pearce, Philadelphia.

72 *Relation of Serum Lipoids and Proteins to Nonspecific Complement Fixation with Normal Rabbit and Dog Serums. J. A. Kolmer, Philadelphia.

73 Effect of Heat on Normal Rabbit and Dog Serums in Relation to Antilytic and Nonspecific Complement Fixation Reactions. J. A. Kolmer and M. E. Trist, Philadelphia.

74 *Complement Fixation in Intestinal Parasitism of Dogs. J. A. Kolmer, M. E. Trist and G. D. Heist, Philadelphia.

75 *Epidemiology and Symptomatology of Outbreak of Septic Sore Throat in Westchester County, New York. C.-E. A. Winslow and L. W. Hubbard, Albany, N. Y.

76 Value of Virulent Salt Solution in Production of Antihog-Cholera Serum by Intravenous Method. R. Graham and L. R. Himmelberger, Lexington, Ky.

77 Filterable Organism Isolated from Tissues of Cholera Hogs. D. J. Healy and E. J. Gott, Lexington, Ky.

67. **Brilliant Green for Isolation of Typhoid Bacilli.**—With an easily prepared agar, two concentrations of brilliant green being used, the authors found it possible markedly to increase the per cent. of positive typhoid isolation from stools. This has given much better results than the employment of brilliant green broth alone, although the dye-broth enrichment method may give positive results when the agar alone fails. The methods can be applied to the isolation of the members of the paratyphoid enteritidis group from stools.

68. **Abderhalden Reaction with Bacterial Substrates.**—The work of Smith and Cook confirming the studies of Bronfenbrenner, demonstrates that the Abderhalden reaction may be divided into two phases. The first phase involves a sensitization of substrate by its specific serum. The second phase represents an autodigestion of the serum, which is not due to specific causes. In the sensitization of substrate an absolute specificity obtains. Whether or not this sensitization is of the nature of an antigen-antibody reaction forms at present the subject of a further investigation.

69. **Nonspecific Complement Fixation by Normal Rabbit Serum.**—Fresh, active serums from normal rabbits in doses of 0.1 c.c. showed nonspecific complement fixation with lipoidal extracts in 5 to 15 per cent. of serums. When these same serums were inactivated by heating them in a water bath at 55 to 56 C. for thirty minutes, complement fixation occurred in 38 to 49 per cent. of the serums. With both active and inactivated serums the highest percentage of positive reactions was observed when alcoholic extracts of heart muscle reenforced with cholesterin were used as antigens; alcoholic extracts of syphilitic liver gave the second highest, and an extract of acetone insoluble lipoids gave the lowest, percentage of positive reactions. With bacterial antigens of staphylococci and colon and typhoid bacilli, fresh, active rabbit serums showed some degree of complement fixation in 31 to 42 per cent. of instances; when these serums were inactivated, positive reactions occurred in 51 to 62 per cent.

The degree of complement fixation with normal rabbit serum and lipoidal and bacterial antigens is usually moderate or slight, as about 50 to 85 per cent. of reactions show 50 per cent., or less, inhibition of hemolysis. The reacting state of a rabbit's serum when the animal is on an average diet is usually constant, in that 80 per cent. of their animals reacted persistently negatively or persistently positively when examined at intervals of three days to a month. Emphasized by Kolmer and Trist that when rabbits are employed for experimental studies with a view to using their serums for complement fixation tests, their serums should be tested one or more times, before inoculation, preferably with the particular antigen to be used, and only those selected that react negatively.

70. **Nonspecific Complement Fixation by Normal Dog Serum.**—The authors found that dog serum in both an active or fresh condition and after heating or inactivation is capable of absorbing complement, in a relatively large percentage of instances, with various lipoidal and bacterial antigens.

72. **Relation of Serum Lipoids and Proteins to Rabbit and Dog Serums.**—Kolmer summarizes this paper as follows: Both the serum lipoids and proteins are concerned in the antilytic and nonspecific complement fixation reactions with normal rabbit and dog serums. The rôle of the serum lipoids in these processes is indicated in the observation that extraction of suitable serums with ether and chloroform usually diminished the antilytic and complement fixing powers of a serum, whereas the enteral and parenteral administration of lipoids increased the antilytic and complement fixing powers. Serums that are extracted with ether are rendered primarily more antilytic; after heating an extracted serum the antilytic titer is generally reduced, as compared with the titer of plain heated serum. Both the globulin and albumin (filtrate) fractions of normal rabbit and dog serums possess thermostabile antilytic and complement fixing properties, usually the former to a slightly greater degree. The antilytic and complement fixing substances of normal rabbit and dog serums are not dialyzable.

74. **Complement Fixation in Canine Parasitism of Dogs.**—According to the results of complement fixation tests with the serums of infested dogs the authors believe that production of antibodies may occur after infestation of the intestines with the common parasites. Production of antibodies was especially in evidence in infestations with tapeworms; to a less degree with the ascarides or round worms, and to a slight extent with the whipworm. These complement fixations have tended to show a biologic relation between the tapeworms *Tenia serrata* and *Dipylidium caninum* and between *Ascaris canis* and *Strongylus gigas,* although on account of the wide morphologic differences they leave it an open question; it is probable, therefore, that complement fixation tests will not differentiate with the usual technic between related species of parasites, although they may show the presence of a parasite. The authors suggest that com-

plement fixation tests may be of value in the diagnosis of intestinal parasitism of man, and they are now making investigations in this field.

75. **Outbreak of Septic Sore Throat.**—An outbreak of 905 cases of septic sore throat occurred in 4 neighboring communities of Westchester County, New York, in the spring of 1915, reaching its maximum between February 15 and March 22. The distribution of cases of the disease over a long period of time and the absence of any common food or milk supply for a majority of the cases Winslow and Hubbard believe indicates that it was spread, for the most part, by contact and in prosodemic fashion. The fact that at the height of the outbreak (February 15 to March 8) there was an increase in the proportion of cases in households supplied by a certain milk dealer, that the family incidence in these households was unusually high, and that the severity of the disease in them was accentuated, indicates that a small milk or cream epidemic was then superimposed on the general prosodemic spread of the disease. Septic sore throat tends to affect females much more than males. Septic sore throat usually affects all ages without marked preference. In the Westchester County outbreak 83 per cent. of the cases showed reddening of the throat, 60 per cent. tonsillar involvement, 50 per cent. glandular involvements, 47 per cent. prostration, 37 per cent. a high temperature (over 102 degrees), 20 per cent. false membrane, 11 per cent. rheumatism, 9 per cent. quinsy, 8 per cent. ear infection, 7 per cent. relapses, 3 per cent. nephritis, 2 per cent. erysipelas, and 0.4 per cent. endocarditis. High temperature, prostration, relapses, rheumatism, erysipelas, and nephritis were symptoms more common among the old; involvements of glands and ears, among the young. When septic sore throat is spread by contact, multiple cases in a household are less numerous than when it is spread by milk. Septic sore throat is generally more severe when milk-borne than when spread in prosodemic fashion.

Journal-Lancet, Minneapolis

Dec. 1, 1915, XXXV, No. 23, pp. 649-677

78 Open-Air Treatment in Surgery. J. W. Markoe, New York.
79 Therapeutic Effects of Radium. D. T. Quigley, Omaha.
80 Psychotherapy. G. J. Gislason, Grand Forks, N. D.
81 Two Hundred Cases of Pulmonary Tuberculosis. J. G. Lamont, Dunseith, N. D.
82 Anuria for Five and One-Half Days in Patient on Whom Left Nephrectomy Had Been Done. G. J. Thomas, Rochester.

Kentucky Medical Journal, Bowling Green

December, 1915, XIII, No. 13, pp. 583-648

83 *Plea for More Thorough Examination of Cases Presenting Symptoms Referable to Pulmonary Tuberculosis. O. O. Miller, Louisville.
84 *Medical Treatment of Incomplete Abortion. B. J. O'Connor, Louisville.
85 Facts in Ophthalmology Essential to General Practitioner. T. W. Moore, Huntington, W. Va.
86 *Focal Infection. N. T. Yager, Louisville.
87 *Complications of Middle Ear Suppuration. L. S. Givens, Cynthiana.
88 Head Cold; Parts Involved, and Some of the Results. C. A. Moss, Williamsburg.
89 Diseased Tonsils, What Shall We Do With Them? C. E. Purcell, Paducah.
90 Roentgen Ray in Diagnosis of Bone and Joint Lesions. J. B. Mason, London.
91 Interstitial Nephritis; Its Cause and Prevention. S. Lambert, Owensboro.
92 Puerperal Eclampsia; Report of Four Cases. W. H. Joyner, East Bernstadt.
93 Rheumatism. T. A. Pease, Kirbyton.
94 Menorrhagia. T. C. Nichols, Morgan.

83. Abstracted in THE JOURNAL, Oct. 16, 1915, p. 1397.

84, 86 and 87. Abstracted in THE JOURNAL, Oct. 16, 1915, p. 1398.

Medical Record, New York

Dec. 25, 1915, LXXXVIII, No. 26, pp. 1079-1124

95 *Rôle of Roentgen Rays in Diagnosis of Ureteral Calculus. W. Meyer, New York.
96 Surgery of Gastric and Duodenal Ulcer in Relation to Insurance Risk. H. Gage, Worcester, Mass.
97 Severely Impaired Audition in Childhood. L. M. Hubby, New York.
98 Correlation Between Olfactory and Genital Functions in Human Female. J. A. Hagemann, Pittsburgh.
99 *Torsion Injuries of Muscles of Abdominal Wall; Report of Cases. G. F. Boehme, Jr., New York.
100 Mental Defectives; Their Importance. H. V. Wildman, Jr., New York.

95. **Roentgen Rays in Diagnosis of Ureteral Calculus.**—Meyer believes that Roentgen rays represent a wonderful assistance to the surgeon in diagnosing the presence of ureteral stones and stones in the urinary tract in general, but insists that the Roentgen-ray examination should be stereoscopic, whenever possible, and include both sides of the urinary tract. In order to do full justice to the patient and to avoid disappointment to surgeon and patient alike, cystoscopy with ureteral catheterization should follow the Roentgen-ray examination. A scratch on the wax-tipped ureteral stilette or catheter furnishes additional reliable proof of the presence of a stone. A negative Roentgen ray result plus missing scratch on the wax-tipped ureter stilette may be accepted as proof of the absence of a ureteral stone in the given case.

99. **Torsion Injuries of Muscles of Abdominal Wall.**—Boehme means any injuries to them or their attachments, caused by the sudden rotation of the body on its vertebral axis laterally, or the sudden extension of the abdominal muscles by a movement in the vertical plane. The four cases he has seen were brought about by the sudden throwing of a weight with the twisting of the body laterally. The traumatism was occasioned by the sudden contraction of the muscles of the abdominal wall against a resistance. There was a sense of something giving way with a sharp pain, and these were found to be an inability to repeat the attempt. In some instances breathing, where of the abdominal type, was painful and markedly limited. On examination a point of tenderness was made out, either in the rectus injured or in the oblique muscles (three cases). Sometimes a slight separation, as evidenced by a dimplelike depression on attempting to use the muscle, could be made out. Movements using these muscles were much limited by pain at the site of the injury. The pathology of the process is simple. Apparently with the intense muscular strain certain fibers in the recti or oblique muscles are ruptured and the tear creates a painful area within the muscle bodies. An adhesive plaster dressing was employed which has proved eminently satisfactory. An adhesive band, 2 inches in width, was started just external to the anterior superior spine of the uninvolved side and carried in the general line of the external on the involved side, around the body to the opposite side of the vertebral column. This was applied during complete expiration. From the opposite anterior superior spine a similar band was carried in the direction of the uninvolved external oblique, crossing the first band at the medium line and ending on the opposite in the back. As many bands were carried up the body as was necessary to immobilize the abdominal wall and to relieve the pain. The relief was instantaneous, the patient was able to resume work of a general variety, although torsion movements were interdicted. As a rule, recovery ensured in about two weeks.

Michigan State Medical Society Journal, Grand Rapids

December, 1915, XIV, No. 12, pp. 597-630

101 Tuberculosis in Children. J. B. Jackson, Kalamazoo.
102 Miliary Tuberculosis of Lungs in Senile Period. E. Rawlings, Kalamazoo.
103 Artificial Pneumothorax in Treatment of Pulmonary Hemorrhage. C. H. Johnston, Grand Rapids.
104 Retrocecal Appendicitis. H. W. Hewitt, Detroit.
105 Congenital Hypertrophic Stenosis of Pylorus. A. O. Hart, St. Johns.
106 Intraspinal Injections of Mercuralized Serum for Cerebral Syphilis. C. F. Karshner, Big Rapids.

Missouri State Medical Association Journal, St. Louis

December, 1915, XII, No. 12, pp. 517-574

107 Factors That Make for Better Results in Cranial Surgery. E. Sachs, St. Louis.
108 *Tumors of Carotid Body; Report of Case. C. W. Russell, Springfield.
109 Chronic Cystic Mastitis. O. L. Castle, Kansas City.
110 *Dealing with Abdominal Adhesions. F. G. Nifong, Columbia.
111 Experiences with Scopolamin-Narcofin Narcosis. R. S. Tilles, St. Louis.
112 Use of Scopolamin-Narcofin During Labor. G. Gellhorn and W. Kerwin, St. Louis.

113 Scopolamin-Narcofin Seminarcosis. O. H. Schwarz, St. Louis.
114 Unusual Extra-Peritoneal Abdominal Neoplasm (Lipoma). J. Geiger, St. Joseph.

108 and 110. Abstracted in THE JOURNAL, June 26, 1915, p. 2162.

Modern Hospital, St. Louis

December, 1915, V, No. 6, pp. 387-462

115 St. Louis Children's Hospital. S. S. Goldwater and B. S. Veeder, St. Louis.
116 Work of Surgical Team in Hospital. N. R. Harlan, Freeport, Ill.
117 State of New York Develops an American Spa. A. W. Ferris, New York.
118 Hospital Floors — Costs, Advantages and Practical Points. R. E. Schmidt, Chicago.
119 Libraries and Their Management in State Hospitals. M. E. Carey.
120 Physicians' Hospital of Thief River Falls, Minnesota. H. W. Froehlich.
121 Chocolate and Cocoa — Their Composition and Food Value. J. P. Street, New Haven, Conn.
122 Medical and Surgical Efficiency in Large General Hospitals. F. A. Washburn and J. F. Bresnahan, Boston.
123 Medical Education. B. F. McGrath, Milwaukee, Wis.

New Jersey Medical Society Journal, Orange

December, 1915, XII, No. 12, pp. 585-636

124 Relation of Dentistry to Neurology. C. C. Beling, Newark.
125 State Care of Insane. B. D. Evans, Morris Plains.
126 Contusions of Abdomen. J. A. Maclay, Paterson, N. J.
127 Urticaria in Children. C. J. Hailperin, Newark.
128 Cleaning of Hand. G. K. Dickinson, Jersey City.
129 Chronic Rhinitis; Its Treatment. M. J. Weiss, Bayonne.
130 Half-Forgotten Heroes. F. W. Owen, Morristown.
131 Surgical Triangle. C. B. Kelley, Jersey City.

New Orleans Medical and Surgical Journal

December, 1915, LXVIII, No. 6, pp. 359-430

132 Diseases of Indians of Southwest and Their Treatment. R. I. Geare.
133 Uncinariasis at Cuyamel. N. Barlow, Cuyamel, Honduras.
134 Interesting History of Kidney Stone. J. F. Oechsner, New Orleans.
135 Tarsal Massage in Trachoma. T. J. Dimitry, New Orleans.
136 Fracture, Dislocations of Cervical Vertebrae. J. T. O'Ferrall and W. P. Bradburn, New Orleans.
137 Case of Hemoptysis, Evidently of Syphilitic Origin. A. L. Levin, New Orleans.
138 Radium an Asset to Surgery. C. W. Allen, New Orleans.
139 Extraction of Exploring Needle Broken in Attempting to do Spinal Puncture for Diagnostic Purposes; Case Report. L. H. Landry, New Orleans.

New York Medical Journal

January 1, CIII, No. 1, pp. 1-48

140 Headache in Its Relation to Nasal Disease. W. Freudenthal, New York.
141 Study of Drug Action. T. J. Mays, Philadelphia.
142 Salvarsan in Primary Syphilis. A. A. Uhle and W. H. Mackinney, Philadelphia.
143 Old Case of Chronic Insomnia. W. R. Riddell, Toronto.
144 Some Puzzling Features of Empyema. J. H. Pryor, Buffalo.
145 Sugars and Starches in Infant Feeding. T. S. Southworth, New York.
146 Headache. F. Neumann, New York.
147 Physiologic vs. Symptomatic Therapy. A. C. Geyser, New York.
148 Simple Guides for Artificial Feeding of Infants. M. H. Edelman, New York.

Northwest Medicine, Seattle

December, 1915, VII, No. 12, pp. 373-406

149 Roentgen Examination of Chest. J. H. Snively, Seattle.
150 Use of Roentgen Ray as Aid in Diagnosis of Pulmonary Tuberculosis. R. W. Matson, Portland, Ore.
151 Tuberculin Therapy. E. S. Jennings, Spokane.
152 Autoserotherapy vs. Artificial Pneumothorax in Treatment of Pleurisy with Effusion. E. A. Pierce, Portland, Ore.
153 Fascial Transplantation; Report of Unusual Case (Desmoids and Ventral Hernia). H. A. Shaw, Seattle.
154 Hypernephroma of Kidney. E. O. Houda, Tacoma.
155 Medical Ethics. S. E. Bruce, Lewiston, Idaho.

Oklahoma State Medical Association Journal, Muskogee

December, 1915, VIII, No. 7, pp. 217-249

156 Nervous and Mental Diseases of Children. J. L. Day, Norman.
157 Examination of School Children by Teachers. W. E. Dixon, Oklahoma City.
158 Empyema in Childhood. G. A. Wall, Tulsa.
159 Importance of Recognizing and Appreciating Diseased Tonsils as Factor in Constitutional Diseases. V. C. Tisdal, Elk City.
160 Development of Child. C. Puckett, Pryor.
161 Hygiene in Home and School. T. A. Rhodes, Coltry.
162 Tuberculosis of Kidney. J. Overton, Tulsa.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

December, 1915, XII, No. 144, pp. 353-392

1 Efficacy of Antimeningococcal Serum in Present Epidemic of Cerebrospinal Meningitis. A. Netter.

British Medical Journal, London

December 11, 1915, II, No. 2867, pp. 845-880

2 Psychic Mechanism of Voice in Relation to Emotions. F. W. Mott.
3 Organic Lesions from Shell Concussion. J. J. Evans.
4 Bilateral Iridodialysis with Amblyopia and Contracted Fields Due to Exploding Shrapnel. F. D. Bennett.
5 *Prophylaxis of Tetanus. A. T. MacConkey.
6 Control of "Diphtheria-Bacillus Carrying"; and Jasmin Oil Method. W. Ewart.
7 Spinal Injuries of Warfare. G. Holmes.

5. **Prophylaxis of Tetanus.**—The experience gained during the first year of the war, MacConkey says, has confirmed the opinion that from 500 to 1,000 United States Army units of tetanus antitoxin is a sufficiently large prophylactic dose for the majority of cases, and that it is advisable in severe wounds to repeat the dose once or twice at intervals of a week. Occasionally cases occur in which antitoxin appears to have little preventive effect. Those cases of tetanus which develop some weeks after the receipt of an injury may be due to the reactivation of a quiescent focus by too early or too energetic active or passive movement. As regards operating in cases of tetanus the opinion before the war was against doing so, and nothing has occurred since to change that opinion. When an operation is proposed in wounded who may have been infected with tetanus bacillus it is imperative to bear in mind that there may be toxin circulating in the body. A large prophylactic injection is consequently necessary, and it should be given in such a way as to ensure that there is no free toxin in the blood at the time of the operation and for some time after. Subcutaneous injections, except as supplementary agents, are out of the question here because of the slow rate of absorption. If the injection be given intramuscularly, then the operation should not take place for several hours. An intravenous injection permits of the operation being performed at once, and as it bears on the question it is of interest to note a statement of Behring's (1915) to the effect that the amount of antitoxin present in 1 c.c. of blood a few minutes after an intravenous injection of antitoxin remains constant for nearly sixty minutes.

Glasgow Medical Journal

December, 1915, LXXXIV, No. 6, pp. 401-476

8 *Cause and Similarity of Origin of Scarlet and Rheumatic Fever. W. Watson.
9 Two Famous Lanarkshire Obstetricians. S. J. Cameron.
10 Action of Medicinal Doses of Lead Acetate. F. Charteris.

8. **Origin of Scarlet and Rheumatic Fever.**—The close similarity of complications and sequelae in such diseases as rheumatic fever, scarlet fever and malignant endocarditis suggests to Watson a common factor in their cause. He says that every symptom of scarlet fever points to an acute intestinal catarrh, fatal in severity in malignant cases, productive of intense irritation in the ordinary cases; and often in the later stages of such, a condition appears which closely resembles enteric fever. In such cases there is a remittent temperature, constipation or diarrhea and rapid wasting which often ends in death. He has seen distinct ulceration of the intestine. This ulceration differs from enteric or tubercular ulceration in being more irregular, less extensive and attacking the solitary glands as well as Peyer's patches, in cases in which the resulting ulceration has left small shallow pits in the mucous membrane. This condition, although not common, Watson believes, justifies the assumption that this portion of the bowel plays a large part in scarlet fever and that it is affected at an early stage. The poison of scarlet fever is a rapidly acting one, and among its first manifestations is catarrh of the alimentary tract, in malignant cases so acute as to cause death before any other symptom has

V. 191

had time to appear, and in the ordinary cases causing a toxic rash, often albuminuria, a red glazed tongue, and an inflammation of all the visible lymphoid tissue of the alimentary tract. If the resisting power of the patient is sufficient, with the end of the fever resulting from the struggle the invasion may be at an end, but there may be from indiscreet dieting, exposure to cold or other causes new developments which often are of a more serious nature. These developments are similar to, if not identical with, in many cases, the symptoms of rheumatic fever.

There are acute articular painful swellings and a tendency to endocardial and pericardial mischief. In other cases nephritis occurs. The albuminuria may be simple, and is usually associated with constipation, or there may be actual tissue changes in the kidney; and from the presence of such a virulent toxin in the blood, and the great tendency to anasarca, it is probable that the malpighian bodies are first affected. During this period there is rapid wasting and anemia, thrombosis, ulcerative stomatitis, sometimes suppuration of the inflamed joints, septic ulceration of mucous membranes, septic thrombi or emboli causing noma; in short, all the symptoms of acute septicemia. The blood changes in these three diseases are the same, there being a polymorphonuclear neutrophilic leukocytosis in each. Watson feels warranted in concluding that in all these cases there is a septic infection of the lymphoid tissues in the region of Peyer's patches. In scarlet fever the attack is acute, but may be prolonged into a chronic ulcerated condition, giving rise to a continuous septic absorption into the blood stream and causing similar changes to those found in rheumatic fever. He suggests that chronic rheumatic arthritis in all probability is due to a somewhat similar action, though it causes no rise in temperature.

Journal of Pathology and Bacteriology, Cambridge

October, 1915, XX, No. 2, pp. 85-213

11 *Histologic and Experimental Observations on Destruction of Tumor Cells in Blood Vessels. T. Iwasaki.
12 *Pathology of Lipomatosis. Y. Matsuoka.
13 Atrophy in Adipose Tissue; Histogenesis of Fat Cells. Y. Matsuoka.
14 *Part Played by Acid of Gastric Juice in Pathologic Processes of Gastric Ulcer. C. Bolton.
15 Pathology of Trench Frost-Bite. J. L. Smith, J. Ritchie and J. Dawson.
16 Pathologic Anatomy of Lungs in Beriberi (Kakke). Y. Matsuoka.

11. Destruction of Tumor Cells.—Iwasaki examined postmortem forty-eight cases of various kinds of malignant tumor and selected sixteen cases, including eleven cases of sarcoma (seven lymphosarcoma, and four other sarcoma), two cases of carcinoma, two cases of hypernephroma and one case of chorionepithelioma-like tumor of the liver for microscopic study. The blood-vessel contents of tumor origin are divided into the following groups: 1. The first group includes the naked tumor-cell emboli. These have newly entered into the vessels and are still free in the blood stream. 2. To this group belong those tumor emboli with comparatively fresh thrombotic covers. These are found either in the blood stream or already fixed to the vessel walls. 3. The third group contains those thrombi in which the process of organization is visible. 4. The process of organization advances further. The contents of the vessels consist of fibrous tissue with capillaries newly developed, and tumor cells. 5. In this group, Iwasaki includes those fibrous contents of vessels in which no trace of tumor cells is now to be seen. The organization and tumor cell destruction are complete and the lumina are for the most part reopened by new capillaries, in which sometimes again new tumor emboli are found. 6. The tumor cell mass is here covered by a thin layer of endothelium continuous with the intima. Iwasaki concludes that the destruction of tumor cells in blood vessels by means of thrombus organization is not restricted to carcinoma, but is common to all malignant tumors. The destruction of cells occurs also in blood vessels by direct action of the plasma. The thin cell layers that directly cover tumor masses are of endothelial nature, and do not consist of tumor cells. When the encapsulation takes place the tumor cells proliferate, and the mass is not disintegrated by organization and degeneration. In such cases the covering layer of endothelial cells may possibly act as a protection of the tumor cells from the cytolytic action of the plasma.

12. Pathology of Lipomatosis.—Material was obtained by Matsuoka from seventy cases examined postmortem. He divides cases of lipomatosis into two large groups. In Group 1 the forcing of the increased adipose cells from the surrounding tissue into the affected organ plays a relatively important rôle, while the proliferation of fat cells in the interstitium of the organ is generally less important. The invasion by fat cells can be prevented by a thick fascia or strong capsule. Lipomatosis occurs readily in places which are physiologically rich in fat, or in organs with a thin coating, or in muscles of all kinds, and in many lymphatic or lymphoid organs, etc. In Group 2, lipomatosis follows replacement fibrosis in all cases. The fibrous tissue produced through chronic inflammation often shows a tendency to become fat. Lipomatosis in this group is the transformation of connective tissue cells in fat cells. In Group 1, the increase of adipose cells is primary and the atrophy of the parenchyma occurs secondarily. While in Group 2 lipomatosis appears as replacement only, in Group 1 there is invasion of the surrounding tissues, the proliferating fat cells generally passing into the tissue, or, if not, accumulating on its surface and causing pressure atrophy. While the organs with lipomatosis, Group 1 show pseudohypertrophia in spite of the atrophy of their parenchyma, those with lipomatosis, Group 2, usually prove to be at most only of normal size and are often subnormal in bulk.

While the lipomatosis, Group 2, accompanies fibrosis, in Group 1, there is destruction of fibrous tissue to be observed; in the heart, Group 1, occurs more frequently in the right ventricle, while Group 2 occurs chiefly in the left ventricle. While cases of general obesity always show lipomatosis of Group 1, Group 2 takes place in emaciated persons. Heart lipomatosis of Group 1, which occurs constantly in cases of general obesity, is observed also as a local lipomatosis, which does not disappear in spite of general emaciation; the definition of so-called fatty heart—that it occurs only in fat subjects and not in others—is on this account incomplete. In a series of cases the degree of invasion of the myocardium, through lipomatosis in different parts of the heart, is quite parallel with the degree of thickness of the epicardial fat in loco. In cases of lipomatosis showing marked atrophy of the parenchyma, regenerating processes are often seen in the parenchyma; for example, the direct nuclear division is skeletal muscle of heart muscle. The enlargement of Langhan's islands in lipomatosis of the pancreas is an example of compensatory hypertrophy. Active hyperemia and a rich supply of blood vessels are generally associated with lipomatosis. The causes and the seats of lipomatosis are other than those of fatty degeneration, and usually lipomatosis occurs without the accompaniment of marked fatty degeneration.

14. Pathology of Gastric Ulcer.—Bolton states that the gastric juice is not only concerned in the initiation of a gastric ulcer, but also in its tendency to spread and to become chronic. It is thus responsible for the anatomic peculiarities which distinguish this ulcer from ulcers in other parts of the body. The gastric juice owes its destructive power primarily to the hydrochloric acid contained in it, and the damage done to the wall of the stomach varies in proportion to the strength of the acid present. Although the hydrochloric acid is usually only a factor in the initiation of an ulcer, some damage being also inflicted on the gastric cells by other means, it is occasionally, when of a percentage of 0.39 and upward and combined with motor insufficiency, the actual cause of the ulcer. The spread of an ulcer is due to persistence of the original cause, but it is more likely to spread when the gastric juice is hyperacid than when of normal acidity. The gastric juice is able to attack the connective tissue base of an ulcer by virtue of the hydrochloric acid contained in it, and when hyperacid, to produce various degrees of delay in the healing of the ulcer as a consequence. This effect is added to when retention of food in the stomach or hypersecretion of the gastric juice is present.

In this way may be explained the condition of delayed healing of acute ulcer in man.

Bolton suggests that it is probable that in human pathology a complete arrest in healing and a resulting chronic ulcer may be similarly brought about, since the experimental methods available for producing hyperacidity are not so effective as the condition present in man. An ulcer heals with difficulty in proportion to its chronicity, and the more chronic ulcers may be kept open by the normal gastric juice. An important point in favor of this view is the similarity between the two conditions. The experimental ulcer is delayed in healing by the necrotic condition of its base, brought about by the hydrochloric acid, and it is precisely the fibrotic base covered with necrotic tissue which prevents the healing of human ulcer. The treatment aimed at reducing the acidity of the gastric contents and facilitating the emptying of the stomach is that which is successful in healing a human gastric ulcer. Associated with chronic gastric ulcer in the human subject are commonly the two conditions: (1) hyperacidity and (2) gastritis. The association of the three conditions has in the past given rise to much speculation with regard to the relation which they bear to one another. It is proved by Bolton's experiments that continued hyperacidity gives rise to gastritis, and, on the other hand, it is well known clinically that if gastritis affects the acidity of the gastric juice the latter is diminished.

Bolton says it seems reasonable, therefore, to assume that the hyperacidity precedes the gastritis and causes it. Gastritis in ulcer may of course be due to irritants in the food, but the regularity of its occurrence suggests that some constant factor is usually its cause. It is obvious that a gastric ulcer does not give rise to diffuse gastritis, and it is equally obvious from these experiments that follicular ulcers, occurring as a part of gastritis, cannot become chronic by continued hyperacidity. Diffuse gastritis, therefore, is neither the cause nor the effect of the ulcer, but results from the irritant action of the hydrochloric acid, or perhaps in other cases from one of the well-known causes of the affection. It is evident that hyperacidity is concerned as a factor in each of the pathologic processes of gastric ulcer, and, on the other hand, although it has been suggested, proof has never been afforded that an ulcer gives rise to hyperacidity.

Journal of Tropical Medicine and Hygiene, London

December 1, 1915, XVIII, No. 23, pp. 265-276

17 Streptococcus Equinus Septicemia in Anglo-Egyptian Sudan. A. J. Chalmers and G. Haddad.
18 Castellani's Bronchospirochetosis; Report of Case. G. A. Lurie.
19 Case of Malarial Fever with Motor Paralysis of Legs. W. H. Heard.

Lancet, London

December 11, 1915, II, No. 4815, pp. 1283-1330

20 Review of Modern Gynecologic Practice. V. Bonney.
21 Cases of Traumatic and Arteriovenous Anastomosis. G. A. Wright.
22 Diagnosis and Treatment of Mediastinal Pleurisy. L. Renon.
23 Clinical Results of One Thousand Intravenous Injections of Galyl. H. Spence.
24 Epidemic of Jaundice Occurring at Alexandria. E. B. Gunson and J. W. C. Gunn.
25 Pneumosan in Treatment of Pulmonary Tuberculosis. A. E. A. Carver.
26 Development of Oöcyst of Human Coccidium; An Addendum. C. M. Wenyon.

Annales de Gynécologie et d'Obstétrique, Paris

November-December, 1915, XI, Nos. 11-12, pp. 669-727

27 *Care for Child Welfare in Paris and Vicinity During the Early Months of the War. A. Pinard.
28 *Is Partial Resection of Sclerous Ovaries Justified? J. P. de Figueiredo. Commenced in No. 7.

27. **Child Welfare Work in Paris.**—This article appeared elsewhere and was reviewed in these columns April 3, 1915, p. 1197.

28. **Partial Resection of the Ovaries.**—Figueiredo describes the microscopic findings in the resected portion of the ovary from a large number of operative gynecologic cases. The work supplements a previous report from the same clinic describing twenty-three ovaries. The final conclusions are thus based on microscopic and clinical study of sixty-one ovaries corresponding to fifty operative cases. The vitality of the follicles was found impaired as a rule and abnormal findings in the stroma were constant, with a single exception. Hemorrhagic foci, cysts in the corpora lutea, islets of interstitial cells, and other morbid changes were frequent. They justify resection when the ovary is seen to be sclerous or sclerocystic, as there is reason to assume that the changes would progress or entail other lesions. Resection is thus indicated, and the more so as the procedure seems to be absolutely harmless. In most of the cases cited the resection was done in connection with an operation for fibroma or salpingitis. For example, a woman of 35 had disease of the right ovary and tube, which were removed, as also a fibroma in the anterior wall of the uterus. The left ovary was enlarged, hard and cystic, and located very low down. Part of this ovary was resected, and the stump fastened to the parietal peritoneum, the uterus to the abdominal wall. The outcome has been excellent.

Bulletin de l'Académie de Médecine, Paris

November 30, 1915, LXXIV, No. 48, pp. 595-662

29 Localized Abnormal Tetanus; Seven Cases. A. Routier.
30 The Respective Rôles of Mechanotherapy and Orthopedic Surgery in Restoring Function to Stiff Joints. (Des raideurs articulaires et des ankyloses consécutives aux blessures de guerre.) E. Delorme.
31 Educating Blinded Soldiers to Write. (L'éducation des aveugles par blessures de guerre.) Monprofit.
32 Extraction of Projectiles in the Pericardium or Heart. O. Laurent; (Extraction d'une balle dans l'oreillette droite du cœur.) Couteaud and Bellot.

Paris Médical

Oct. 16, 1915, V, No. 23, pp. 389-404

33 Effects of Asphyxiating Gases and Treatment. F. Rathery and R. Michel.
34 Curative Action of Antitetanus Serum. G. Milian and Lesure.
35 *Rest and Moist Heat in First Treatment of the Wounded. (Aperçus sur le traitement des blessés dans une ambulance de première ligne.) M. de Laroquette.

October 23, Nos. 24-25, pp. 405-448

36 Legislation Against Depopulation. G. Linossier.
37 Commotion from Explosion and Its Consequences for the Nervous System. P. Sollier and M. Chartier.
38 Psychiatry in the Active Army. P. Chavigny.
39 Simulation of Nervous Affections; Simulation Continued After Recovery from Actual Nervous Affections; Simulation of Deaf and Dumbness. J. A. Sicard.
40 Posttraumatic Contracture and Surgery in War. L. Duvernay.
41 Prognosis of Fracture of the Skull by Projectile. F. M. Cadenat.
42 Organic Paraplegia from Explosion of Large Shell Without External Wound. C. Joubert.

35. **The Ambulance Near the Firing Line.**—Laroquette gives a number of photographs of field hospitals and sorting stations only a few miles from the firing line, and describes his own experiences in one of the ambulances near the front. The method of treating the wounded which has given the best results in his hands is to apply a large dressing dipped into a very hot 1 per thousand solution of permanganate or a 3 per cent. solution of sodium bicarbonate. The relief of pain under this moist heat is marked. The man is kept under strict surveillance as he is in bed, the wounded region immobilized, and wrapped in this voluminous moist dressing. If local or general signs of infection are detected within twenty-four to forty-eight hours, then the wound is thoroughly cleared out. This became necessary only in 30 per cent. of the seton cases and in 80 per cent. of the fracture cases. In order to have this method applied it is necessary that the wounded should be kept at the ambulance for a few days. The rest is good for the wounded; they do much better when they can be left in peace in a bed or on a pile of straw, with a little morphin, soup and milk, and allowed to sleep off the first effects of the shock they have undergone. Even with the marvels of the hospital train, the "transportable" wounded do better for a few days of repose, and Laroquette urges that school and farm buildings, factories or villas should be set apart for the wounded in sufficient numbers to permit this armed expectancy during the first few days.

V. 191

Revue de Gynécologie et de Chir. Abdom., Paris

August, 1914, XXIII, No. 2, pp. 97-208

43 Eight Years of Abdominal Hysterectomy for Cancer of Uterine Cervix. A. Maurer.
44 Pain in Left Side with Appendicitis as Sign of Rupture of Pelvic Abscess. (Cas d'appendicite avec point de coté gauche.) R. Proust and J. Paris.
45 Primary Cancer in Appendix of Young Woman. X. Bender.

June, 1915, No. 3, pp. 209-272

46 *Restricted Hysterectomy Completed by Radium Exposures in Treatment of Uterine Cancer; Six Cases. S. Pozzi and G. Rouhier.
47 Tuberculous Nodule in Breast. X. Bender.

October, 1915, No. 4, pp. 273-352

48 *Mishaps with Tubal Pregnancy. (Accidents de la grossesse tubaire.) C. Lenormant and G. Hartmann.

46. **Partial Hysterectomy Plus Radium Therapy for Uterine Cancer.**—Pozzi and Rouhier analyze the literature on the simultaneous application of operative measures and radium therapy, and report six cases from Pozzi's service. They regard this combination as very promising, vaginal hysterectomy plus radioactive drainage yielding results in the long run surpassing those of the more extensive abdominal operations which have such high operative mortality.

48. **Tubal Pregnancy.**—Among the thirty-seven cases related here in detail, there was a history of genital lesions preceding the abnormal pregnancy in fully a third of all the cases. The cases demonstrate anew that the first hemorrhage in such cases is rarely fatal. There are generally several periods of hemorrhage. Metrorrhagia was common in these cases and simulated an ordinary abortion. This led to the blunder of curetting the uterus in one case. In eleven cases there was an encysted hematocele, palpable as a tumor, soft or hard, and in the infected cases there was fever. In two cases the interval since the hemorrhage was probably two months, and even at this late date the hemorrhage may start up anew during the operative maneuvers. In one case a residual abscess in the pouch of Douglas testified to the dangers liable with conservative surgery. This case is interesting as an example of recurrence of tubal pregnancy on the other side.

Berliner klinische Wochenschrift

Nov. 29, 1915, LII, No. 48, pp. 1225-1248

49 *Origin and Cure of Itching. (Kriegsaphorismen eines Dermatologen. Entstehung und Beseitigung des Juckens.) P. G. Unna. Commenced in No. 42.
50 Camp Diseases and Importance of Contact Infection. (Ueber die Kriegsseuchen.) Menzer. To be continued.
51 *Tests of the Functional Capacity of the Heart. (Zur Funktionsprüfung des Herzens.) Rehfisch.
52 Localization of Anatomic Parts with the Roentgen Rays. M. Levy-Dorn.

49. **Cause and Treatment of Itching.**—Unna states that recent research has explained the mechanism of itching. It results from irritation of the free nerve terminations in the blood capillaries in the papillary layer. Cocain and epinephrin abolish itching and pain, but leave the sensation of touch unimpaired, while saponin banishes the latter, but does not modify pain and itching. In order for itching to occur, therefore, there must be papillae containing blood vessels and a horny layer above, as otherwise there is no pressure on the vascular papillae. It is impossible to induce itching in the surface of an ulcer and of granulations, but as they heal over and epidermis forms, and as the horny layer presses on the granulations, the region itches until the pressure of the capillaries and of the horny layer reaches a balance. If a blister forms, itching ceases, so that continuity between the horny layer and the papillary blood apparatus is necessary for itching to occur.

Whenever the pressure of the horny layer increases along with the capillary pressure, itching follows. Hence there is itching with dry eczema, lichen and prurigo papules, and incipient folliculitis and furuncles. Simple thickening of the horny layer, without increased capillary pressure, does not alone entail itching. But when the temperature changes, and thus a change in the capillary pressure is brought about, the region may begin to itch. Salicylic acid, soaps, etc., relieve itching by their action on the epidermis; as they soften it the pressure on the tissues below grows less. Itching can be combated also by reducing the pressure in the capillaries, as with epinephrin or cocain, electricity, or withdrawal of blood by venesection, or by scratching. The blood can also be driven out of the capillaries by pressure from without, as with collodion, elastic stockings, binders, plasters and bandages. On the other hand, the release from the pressure of the clothes, in undressing, may start varicose veins to itching by the gravity hyperemia that follows, bringing increased pressure in the capillaries.

Anemic surfaces never itch, but when the Esmarch bandage, for instance, is removed there is liable to be itching, as also after the skin has been chilled. The cold contracts the vessels, the veins yield to it more readily than the arteries on account of the higher pressure in the latter. The consequence is a slowing of the blood stream and actual stasis hyperemia in the region chilled. As the region warms up, the capillaries become distended and press against the horny layer, thus inducing irritation of the nerve terminations and itching is liable to follow, as when the skin of the face or hands itches when we enter a warm room or settle down in bed. Warmth does not induce itching unless there has been previously a stasis hyperemia. He says further that the itching that accompanies the hot flashes of the menopause can be arrested, along with the hot flashes, by cold compresses, as this reduces the supply of blood to the paralyzed musculature of the arteries. Cold applications, however, increase the itching after frost bite, as the cold causes the musculature of the skin to contract and thus increases the resistance of the epidermis to the capillary pressure below.

When the horny layer has become thickened from disturbances in its blood supply from contracture of the musculature of the skin, as in lichen and prurigo, the horny layer exerts great pressure. Then if at any point beneath it the arterial walls become paralyzed, so that there is excessive inflow of blood, or if there is inflammatory exudation, the resulting itching is the severest and most tenacious we know.

[This article on "Itching" seems to have been continued in five installments. Four of the November numbers of the *Wochenschrift* have failed to arrive, but we summarize as above the three installments received. A review of one of the missing numbers in another exchange states that Unna commends monochlorbenzol as a very effectual and nontoxic means to relieve the conditions which cause itching. He uses it in a 1, 2 or 5 per cent. alcoholic solution, adding 2 per cent. castor oil if the skin is very dry.]

51. **Tests of the Functional Capacity of the Heart.**—Rehfisch strives to learn by auscultation whether or not the pressure in the aorta is sinking while it is rising in the left atrium. We know that this occurs in animals when the left ventricle is becoming insufficient. When a healthy person exercises his knees ten times a larger amount of venous blood flows into the right auricle and there is force enough to pass on the whole quantity; the left ventricle also expels it all in turn, and normal conditions prevail again. This is manifested in the aortic sound being louder than the second pulmonic sound. This occurs because the pressure in the arterial system is about a third higher than in the pulmonary. Hence the louder aortic sound testifies to a functionally capable heart after this standard knee-bending exercise. If the left ventricle is unable to expel all the blood wave, some blood is left behind and passive dilatation follows; the blood pressure drops and the second aortic sound becomes less accentuated. Comparison with the findings with the Katzenstein and other tests of heart functioning always confirmed the reliability of this attenuation of the second aortic sound as the most pregnant sign of insufficiency of the left ventricle. If it is unable to expel all its contents, the auricle is unable to force all its contents into the ventricle, and the auricle becomes over-distended and the blood pressure within is forced higher and higher. If the right ventricle is still normally capable, it is able to overcome this increased resistance in the left auricle, but the extra effort it makes to accomplish this is evident in the accentuation of the second pulmonic sound. It becomes louder than the second aortic sound, contrary to the normal findings.

When this is the case, we can assume that the right ventricle is going to be able to compensate to a certain extent for the deficit in the left ventricle's functioning. If the right ventricle is unable to do this, it dilates and the second pulmonic sound grows weaker. The prognosis is correspondingly graver.

Rehfisch adds that when the vasomotor center is inclined to be unstable, the first aortic sound is usually considerably louder than the second. This center may be injured by toxic influences or by concussion, and it may induce constriction of the vessels instead of the normal and beneficial dilatation, constriction not only of the peripheral but of the coronary vessels. Evidence of the latter is the pain in the chest region, similar to angina pectoris. "This assumption requires confirming with the plethysmograph." Arteriosclerosis detracts from the import of the auscultation findings. Mönckeberg found evidence of arteriosclerosis in 43 per cent. of 53 cadavers of soldiers between 20 and 30, not only of the aorta but often of both coronaries, and especially of the left. This presclerosis is thus much more common among young soldiers than hitherto supposed, and it should be borne in mind in the study of heart affections of the type we usually classify as purely nervous. It is difficult to detect, as there may be no hypertrophy or high blood pressure, but roentgenoscopy often reveals pronounced enlargement of the entire arch of the aorta.

Medizinische Klinik, Berlin

Nov. 7, 1915, XI, No. 45, pp. 1225-1252

53 *Typhoid Disturbance in Hearing. (Die Typhusschwerhörigkeit.) Rhese.
54 Lacunar Hyperkeratosis. E. Urbantschitsch.
55 Typhus in Prisoners' Camp. (Ueber Fleckfieber.) O. Müller. To be continued.
56 Stomach Wounds Absolutely Fatal Without Operative Treatment. (Die Prognose der Magendarmschüsse ist ohne Operation absolut schlecht.) Böhler.
57 Extension with Triangular Support for Fracture of Upper Arm. W. Burk.
58 Artificial Light in Treatment of Wounds, Especially Wounds in War. (Behandlung von Wunden unter bes. Berücksichtigung von Kriegsverletzungen mit künstlichem Licht.) Breiger.

53. Typhoid Deafness.—Rhese does not mention the number of cases of typhoid in his service but he states that there was bilateral deafness in 14.9 per cent. with the middle ear intact. In 4 per cent. there was otitis media with perforation, and without perforation in 1.1 per cent. There figures do not include the cases with transient deafness. In all his cases the deafness was bilateral. It developed usually in the second, third or fourth week but sometimes as late as the seventh. It subsided completely as a rule in time, but in some cases left permanent deafness. Any measures that reduce the toxic action of the disease aid in dispelling the deafness, and consequently the otologists are watching with interest the attempts to treat typhoid with vaccines. Mild courses of pilocarpin gave favorable results, as also sodium iodid as soon as the intestines could bear it. When symptoms indicated pressure, lumbar puncture aided in combating meningitic symptoms and also the otitic. Vaccination against typhoid has reduced the frequency and the severity of complications on the part of the ear. The deafness is of five different types, as he explains in detail, discussing the prognosis with each form of neuritis or labyrinthitis.

Münchener medizinische Wochenschrift, Munich

Nov. 23, 1915, LXII, No. 47, pp. 1597-1632

59 *Transfusion of Own Extravasated Blood. (Eigenbluttransfusion bei Extrauteringravidität und Uterusruptur.) Lichtenstein.
60 Peculiar Action of Minute Proportions of Copper. (Die oligodynamische Wirkung des Kupfers.) K. Spiro.
61 *The Mercury Vapor Lamp in Treatment of Skin Disease. (Ueber therapeutische Erfolge mit der Quarzlampe.) G. Stümpke.
62 Cure of Cancroid of the Vulva with Zeller's Caustic Paste Plus Silicic Acid Internally. (Heilung eines Vulvakarzinoms mit dem Zellerschen Verfahren.) W. Reusch.
63 Holder for Slides. (Behalter zum Aufheben der Objektivträger.) H. L. Heusner.
64 Advantages of Combining Vaccination Against Both Typhoid and Cholera. G. Seiffert.
65 Injury of Vision from Wounds in War. (Beurteilung der Kriegsverletzungen des Sehorgans.) L. Schreiber.
66 Neurotic Alopecia Areata in Wounded Soldier. A. Pöhlmann.
67 Means to Restore Functioning after Wounds in War. (Zur Prophylaxe der Deformitäten.) Nieny; (Zur Mobilisierung versteifter kleiner Gelenke.) W. Goebel; (Einfache Handstützschiene.) Langemak; (Apparate zur Verhütung und Behandlung der Spitzfussstellung und zur Extensionsbehandlung der Unterschenkelfrakturen.) K. Alexander.
68 *Epinephrin in Local Treatment of Wounds. (Beeinflussung der Wundheilung durch Suprareninlösung.) A. Wildt.
69 *Renal Tuberculosis in the Troops. (Nierentuberkulose bei Feldzugsoldaten.) C. Schneider.
70 Sterilizing Newspapers for Surgical Work. (Verwendung steriler Zeitungen für Operationszwecke.) G. Rüdiger.
71 Impressions of a German Physician in Moscow during the Last Year. (Ein Jahr ärztlicher Kriegseindrücke in Moskau.) Anon.

59. Autotransfusion of Blood After Severe Gynecologic Hemorrhage.—Lichtenstein comments on the old view that the death from hemorrhage was due to the lack of sufficient oxygen bearers in the blood left, not enough to supply sufficient oxygen to the nerve centers, especially the respiration center. A newer view ascribes the fatality to the loss of fluid; the heart is unable to functionate with a much smaller volume of circulating fluid, and transfusion of 100 or 200 c.c. of blood does not help much after losses of 1,000 or 1,500 c.c. of blood. Saline infusion is relied on to restore the circulating fluid to approximately its former bulk, but this does not restore its former composition to the blood and does not always ward off death after severe hemorrhage. Some even assert that the extreme dilution of the blood may be actually responsible for the fatal outcome.

In gynecology, extra-uterine pregnancy and rupture of the uterus are the main causes of the hemorrhages which prove fatal. He had two fatalities from a ruptured tubal pregnancy in 1913 and 1914, although both women were operated on almost at once. Since then he has adopted J. Thies' suggestion to collect the fluid blood in the abdomen and, after diluting it 3:2 with salt solution, to reinject this into the patient. Thies thus saved three pulseless women, reinjecting their own blood into the subcutaneous tissue of the thigh, a vein in the arm, or a vein in the mesentery. The pulse rapidly regained tone and there was no fever. Lichtenstein has been equally successful with this method of "own blood transfusion" in seven cases of extra-uterine pregnancy and one of rupture of the uterus. In four, at least, of the cases the condition seemed to be as grave as in the two fatal cases described from the preceding years, and there is every reason to assume that the reinjecting of the patient's own blood enabled them to weather the storm. All the patients thus infused recuperated remarkably fast. No chill followed the transfusion in any instance, and the general condition improved so much that no physician would have guessed that the patient had just had a severe internal hemorrhage. None of them complained of weakness when they got up by the eighth day. The abdominal cavity in a previously healthy woman can be regarded as sterile in cases of fresh hemorrhage from a ruptured tubal pregnancy. This is dubious with a ruptured uterus; in the one case of this kind the rupture occurred in a cesarean cicatrix and the bag of waters was still intact. The bleeding came from a part of the placenta that had been torn loose. Even when conditions are less favorable than this, the question of reinjecting the loose fluid blood should be considered. There have been six fatal cases of this kind at the clinic recently.

The blood is ladled out of the abdominal cavity into a wide jar containing a little Ringer's fluid. It is then beaten with little sticks, and strained into a vessel containing enough warm Ringer's solution to bring it to the proper dilution. The vessel is then set in a water bath while the abdominal operation is being concluded. The blood mixture is then allowed to run into a vein in the left arm from a glass funnel and tube. In the exsanguinated it is difficult to locate the vein; he seeks it through a transverse incision, then loosens the tissues above and below with the back of the knife, and lifts the vein with two catgut threads passed beneath it with an aneurysm needle. He has recently devised a valve apparatus on the principle of the syringe used for injection of salvarsan, and has found this a great improvement over the rather primitive funnel technic.

61. Therapeutic Success with the Mercury Vapor Lamp.—Stümpke has been using both the Kromayer quartz lamp and

the lamp known as the artificial mountain sun *(Quarzlampe* and *künstliche Höhensonne)*, and has applied this form of radiotherapy in new fields and with promising results. The itching in refractory prurigo and pruritus was materially reduced by repeated exposures to the quartz lamp, while clinical improvement was evident in other ways. He has often seen cases rebellious to arsenic, Roentgen and other measures yield surprisingly to the quartz lamp. He has had the same experience with neurodermitis, and in a number of cases of subacute and chronic eczema on a constitutional and seborrheic basis. In the latter group the ultraviolet rays seem to modify the tissues in some way which permits the ordinary measures then to display their efficacy. Rheumatism and sciatica are also favorably influenced. He applies the lamp at a distance of 50 cm. for ten or twenty minutes for exposure of a large surface.

68. **Epinephrin in Local Treatment of Wounds.**—Wildt relates that he has been using since 1910 a 1:100,000 solution of epinephrin applied directly to granulating surfaces, and states that this keeps the granulations soft and velvety, as they consist mostly of newly formed blood vessels. He has continued this method of treating wounds during the war, and has applied it in the last six months to 421 wounded soldiers. There were never any injurious by-effects and the wounds made a better showing than those treated by hot air, scarlet red, ultraviolet rays, etc.

69. **Tuberculosis of the Kidney in Soldiers.**—Schneider protests against the too frequent overlooking of tuberculous nephritis. Men are treated for weeks and months for supposed catarrh of the bladder, and precious time is wasted before the true trouble is diagnosed. He impresses on physicians that every long continuing case of catarrh of the bladder in the young, with the urine findings he describes, should be regarded and treated as of tuberculous origin until the contrary is proved. Even the suspicion of renal tuberculosis, with the symptoms of catarrh of the bladder, is a long step toward the correct diagnosis. The patient notices unusually frequent desires to urinate, day and night, and during or after micturition there are pains in the perineum or lower abdomen and occasionally a drop of blood shows in the urethra afterward. There is usually a history of tuberculosis in the family and of some slight pulmonary catarrhal process or attack of costal pleurisy as a child. The amount of urine voided may be above the normal, from 2 to 3 liters a day are not unusual, and the single portions are larger than with gonorrhea. The urine is more regularly turbid, not flaky or creamy; sometimes it is bloodstained, but the odor is normal. The microscope shows in the unstained specimen numerous leukocytes and occasional fresh red cells, but no bacteria. If there are peculiar long narrow epithelium scraps in large numbers, tubercle bacilli must be sought with a staining technic, examining specimen after specimen. Animals can be inoculated, but this often fails under these circumstances. A small provocative injection of tuberculin will often drive out tubercle bacilli so they can be found in the urine in the next few days. The tubercle bacilli are slenderer than smegma bacilli, and sometimes they lie crossed or one above another.

Renal tuberculosis is of more common occurrence than generally surmised, and hitherto latent cases flare up under the stress of the campaign. Injection of indigo carmin generally shows which side is affected, even without catheterization of the ureters. Another differentiating procedure is tentative treatment of the bladder with a silver nitrate solution. This improves the catarrhal condition in the bladder if it is of simple gonorrheal origin, while it aggravates tuberculous processes.

Therapeutische Monatshefte, Berlin

November, 1915, XXIX, No. 11, pp. 589-644

72 *Modern Treatment of Eclampsia. P. Werner.
73 *Treatment of Acute Empyema. R. Massini.
74 Radiotherapy at the Breslau Gynecologic Clinic. (Die physikalischen, technischen und klinischen Grundlagen der Strahlentherapie der Breslauer Frauenklinik.) F. Heimann.
75 *Test for Adsorbent Properties. (Neue Methode zur Prüfung des Adsorptionsvermögens von Tierkohle und anderen Adsorptionsmitteln.) M. Guggenheim.

72. **Modern Treatment of Eclampsia.**—Werner reviews the experiences at the second gynecologic clinic of the University of Vienna. He emphasizes certain facts which testify against the assumption that the fetus or placenta is the source of the severe intoxication of practically all parts of the body which we know as eclampsia. Among these negative proofs are the occurrence of eclampsia with a hydatidiform mole and no fetus, and its development in the puerperium after fetus and placenta have been expelled. Most convincing of all are the so-called intercurrent cases during a pregnancy in which the eclampsia subsided while the pregnancy continued its course. For these and other reasons it is no longer regarded as necessary to empty the uterus as the first and indispensable measure in treatment of eclampsia as was formerly the rule at the clinic. Since this has been abandoned, in 120 cases the maternal mortality was 15.8 per cent. and the fetal mortality 44.3 per cent. up to 1913. Since then there have been 38 cases of eclampsia and the mortality has been only 5.2 per cent. among the mothers and 14.65 per cent. among the children. The routine treatment is now to isolate the eclamptic at once in a darkened, absolutely quiet room. The obstetric examination is made under slight general anesthesia, during which the urine is drawn with a catheter for examination. Venesection then follows, drawing from 400 to 600 c.c. of blood, followed by injection of 0.02 gm. morphin and, two hours later, 3 gm. chloral in an enema. If the fetus presents in a position favorable for prompt delivery, the child is taken with forceps or by expression in order to spare the patient the stress of the labor contractions. The venesection may have to be repeated, and the morphin and chloral continued; if diuresis is not adequate it is stimulated. It has never been found necessary to resort to decapsulation. When the eclampsia develops during pregnancy, delivery is brought about with a bougie or is accelerated with the inflatable bag.

73. **Treatment of Empyema.**—Massini emphasizes the importance of the after-treatment for the outcome of the case. More depends on this, he declares, than on the primary operation, and it has to be individualized for each case. He gives the details of seventeen cases including four with fatal outcome from cancer or pulmonary tuberculosis. The method followed was a simple puncture, using a trocar with an inner diameter of 7 mm. followed by aspiration drainage according to Perthes. The pus seems to be the thickest with staphylococcus empyema, and it is most fluid with putrid empyema from anaerobic infection. It is important to bear this in mind as the heart is affected most in this latter type and is liable to be displaced by gas, so that sudden reduction of pressure might be perilous. After puncture and aspiration of the pus, one is justified in waiting for three or four days to see if the empyema becomes spontaneously absorbed. If not, the drain, which he has introduced for 20 to 30 cm. is connected with a water jet, interposing a self-regulating manometer. He uses an ordinary cylindrical jar for this, with three openings in the stopper, one for the right angled tube connected with the drain, another connected with the water jet. The third is a straight and open tube in the center of the stopper extending down for about 6 cm. into the water with which the jar is half filled.

As the empyema is seldom primary, the underlying process must be discovered and remedied; aside from this, the mechanical factors generally determine whether healing is to take days or weeks. When the outflow stops, the trouble is generally not in the drainage system but inside the chest. When nothing else helps to start the outflow he flushes out the empyema cavity with a 1:5,000 solution of potassium permanganate under low pressure, not pouring in more than 10 or 20 c.c. at a time, but continuing this until a few hundred c.c. have thus been introduced and the fluid is then allowed to flow out. He warns that the opening grows up so fast that it is best not to take out the drain. In one of his cases an intercostal artery became eroded, but the hemorrhage was arrested by tamponing and a new opening made for the drain. Development of adhesions later is warded off by the care to have the lung expanded to the utmost. Pains in the joints are usually of toxic origin and may yield to the salicylates, unless there is metastatic suppuration. He allows the patient

to get up when there is no further fever and not more than 5 c.c. fluid drains away. At this time or even earlier the water jet may be disconnected at night. Later, the drain tube may be shortened and the water jet connection applied only for a few hours, but with a higher negative pressure, up to 20 cm. water. It is time then to start breathing exercises and gymnastics. What can be accomplished by the latter measures is illustrated by one of his cases in which a fistula had persisted for a year after resection of ribs for an extensive empyema with several pockets. The side of the chest now expands and is movable nearly to the same extent as the sound side. These exercises for the lungs also ward off secondary trouble in later years, and preexisting lesions are favorably modified. He regards Roentgen examination and control as especially important.

75. **Tests for Adsorbent Capacity.**—Guggenheim applies Magnus' experimental technic which records the movements of the guinea-pig intestine outside of the body when the bowel is treated with a chemical substance, before and again after it has been mixed with blood charcoal or other adsorbent substance. The action on the bowel of the chemical in question is annulled if the chemical is fully adsorbed. He has found beta-imidazolylethylamin particularly adapted for the purpose of the test.

Wiener klinische Wochenschrift, Vienna

Nov. 4, 1915, XXVIII, No. 44, pp. 1185-1216

76 *Epileptic and Hysteric Seizures Brought on by Brief Test Compression of the Carotid Arteries. C. Tsiminakis.

77 *Skin Reaction Indicating Protection against Typhoid. (Diagnostische Hautreaktion bei Typhusrekonvaleszenten, Typhuskranken und Schutzgeimpften mit "Typhin" nach Gay and Force.) E. Pulay.

78 Differential Importance of the Hemolysin Reaction in the Cerebrospinal Fluid in Meningitis. (Weil-Kafkasche Reaktion.) G. Salus.

79 Relations between Ozena and Disease of the Nasal Accessory Sinuses. L. Rethi.

80 Mechanical Devices to Aid in Overcoming Consequences of Wounds in War. (Heilgeräte für Folgen nach Kriegsverletzungen.) F. Riedl. Commenced in No. 43.

81 Adaptation of Farm Wagons for Carrying Several Reclining Wounded. (Zur Frage des Verwundetentransportes in der vorderen Linie.) F. Tintner.

November 25, No. 47, pp. 1273-1308

82 *Industrial Skin Lesions in Workers on Munitions. (Hautschädigungen in Munitionsfabriken mit bes. Berücksichtigung der Quecksilberwirkung.) M. Oppenheim.

83 *Streptococcus Lacticus Enteritis. (Kokkenenteritis.) R. R. v. Wiesner.

84 Histology of the Exanthem in Typhus. J. Kyrle and G. Morawetz.

85 *Antitoxin Production during Tetanus. (Zur Tetanusimmunität des Menschen.) O. Löwy.

86 Principles for Apparatus to Restore Functioning after Wounds in War. (Heilgeräte für Folgen nach Kriegsverletzungen.) O. Bum.

87 Operations on a Hospital Train. (Zur Frage eines Operationswagens auf einem Spitalzuge.) V. C. Irk.

88 Suggestions to Improve Equipment for Field Hospitals. (Vorschläge für Reformen in der Ausgestaltung des chirurgischen Apparates der Feldsanitätsanstalten.) P. Odelga.

76. **Compression of Carotid in Relation to Epilepsy and Hysteria.**—Tsiminakis assumes that the casual slight internal or external irritation which brings on the epileptic seizure does this by inducing some momentary functional disturbance in the epileptic focus, and it is during this disturbance that the seizure occurs. If this be true, then artificially inducing such a similar transient disturbance in the circulation in the epileptic focus would induce the same functional disturbance and be liable to bring on a seizure. The disturbances in question cannot be of the nature of hyperemia as Bier has never witnessed an epileptic seizure brought on, even in epileptics, by the constricting band around the neck to induce local hyperemia. There is considerable evidence which indicates that deprival of the normal supply of blood modifies the epileptic focus enough to bring on seizures, and Tsiminakis found this assumption confirmed by his experiments on epileptics, hysterics, and normal controls. His aim was to induce transient anemia in the brain by compressing the carotid arteries. He applied his thumbs to the arteries with sudden force, to shut off abruptly the circulation in the part of the brain nourished by the carotid arteries. In thirty healthy persons momentary unconsciousness followed the compression, usually in about half a minute. He never kept up the compression for longer than a minute. The unconsciousness noted in the healthy was accompanied by complete relaxation of the entire musculature, the head drooping to the side or forward. This brief compression of the carotids was applied further in 116 patients, mostly epileptics. The epileptics became unconscious more quickly than others, at latest, in thirty seconds, and the onset of the unconsciousness was followed at once by epileptiform convulsions or local spasms, struggling and kicking movements for from ten to forty seconds; later these were followed by the characteristic fixed stare such as is seen toward the close of an epileptic seizure and in cases of epileptic somnambulance *(Absenz)*. The patient came to himself in from one to five minutes, and then complained of oppression in the head, dizziness and depression of varying intensity, as with spontaneous seizures. The healthy complained only of momentary dizziness after their brief loss of consciousness while the carotids were compressed; consciousness returned at once as the carotids were released from the pressure. In seven cases of jacksonian epilepsy there were local spasms in the group of muscles involved, followed by tingling and tremor as with the spontaneous spasms. In forty-two cases of hysteria the compression of the carotids brought on a typical hysteric convulsion in all; suggestion was excluded. Pressure at other points never induced the convulsions.

He says in conclusion that the epileptic seizures induced by the anemia from compression of the carotids are never as long nor as severe as the spontaneous seizures in the same patient, but they are so characteristic that they are of great moment for the differential diagnosis, as well as for the pathogenesis and mechanism of the seizure and possibly may afford a basis for treatment.

77. **Skin Reaction Indicating Protection Against Typhoid.**—Pulay gives summaries of the response to the skin test with typhoidin in 28 healthy persons, 6 typhoid patients, 35 convalescents, 39 men vaccinated against typhoid and 5 who had a history of typhoid long ago. This experience confirms the statements of Gay and Force in regard to the differential value of this skin reaction.

82. **Industrial Affections from Manufacture of Munitions.**—Oppenheim comments on the increase in industrial skin affections in Vienna since the beginning of the war. In the leather, canning, textile and laundry industries they have attracted attention but they are most marked in the workers manufacturing munitions. One reason for this is that unaccustomed workmen are employed, and even quite young girls and women, whose skin is more sensitive to injury. The skin affections encountered in those making explosives, bombs, shrapnel and grenades all bear such a common likeness they must be regarded as occupational affections. The most interesting are those resulting from poisoning with mercury in the manufacture of shells *(Zündkapseln)*. Besides acute dermatitis of the face and hands, the workers present the syndrome familiar from mercurial poisoning in therapeutic administration. The mercurial poisoning manifested itself first as a redness of the face and back of the hands followed by more or less pronounced edema of the face. There was seldom any severe dermatitis unless other irritating substances were handled. On suspension of the work all the phenomena subsided in a week or two. He tabulates the details of 26 cases of this kind. In 5 cases the dermatitis was accompanied by pustules or blisters. In 10, there was stomatitis which progressed to ulceration only in one case. In 6, mercury was found in the urine. In 18 cases the work was the production of mercury explosive *(Knallquecksilber)*; this work was done with moisture; in 3 the workers had been making powder *(Schwarzpulver)*, and the disturbances were milder. In 5 other cases the workers had had to clean and polish metal articles with petroleum, acids, turpentine, benzol or ammonia. Cooperating factors were the use of alcohol, antimony, potassium chlorate, solution of glue and nitric acid. The finger nails of some showed characteristic changes from the effect of the acid in lifting the shells out of the cleansing solution. The hands of those

V. 191

making fuses present series of cracks parallel to the ulnar edge. Burns from the explosions leave sometimes a peculiar yellowish discoloration from nitric acid. In one case a woman had irregular ulcerations on the back of all the fingers of the right hand with which she dipped up shells from a mixture of soapy water with acid. There were large numbers of cases of acne, folliculitis and furunculosis, resembling in every respect the common petroleum acne and crude oil acne. In these cases the workers had to clean and lubricate machines, shells, etc. One man whose task was the filling of gas bombs, supposedly with xylol and hydrobromic acid *(Bromwasserstoff)*, had acne pustules and furuncles on brow and cheeks and neck until he had to give up the work. As the workers learned to protect themselves, this occupational injury became less frequent and milder. Prophylaxis should be the same as in mercurial medication, greasing the exposed skin, wearing gloves, exercising in the open air after work and thorough ventilation of the workrooms.

83. **Coccus Enteritis.**—Wiesner relates that in the efforts to keep cholera, typhus, etc., from getting a foothold in Vienna, bacteriologic examinations have been conducted by the hundreds, and this systematic wholesale work has revealed a number of new facts. Among them he mentions that the *Streptococcus lacticus* was found in over 50 per cent. of 650 stools examined; it was in pure culture in 72 of the 397 positive cases. His research on endotoxins, agglutination, etc., compared with the clinical course, confirms the assumption that the *Streptococcus lacticus* has pathogenic properties when conditions in the intestines favor its proliferation to an unusual extent. It may alone induce enteritis, but it generally exerts its pathogenic action only after typhoid, dysentery or stasis hyperemia, so that it may be regarded as almost a specific secondary infection. The endotoxin in small amounts is not harmful for man, but when produced in large amounts, it irritates the bowel. These coccus stools showed local and time features suggesting epidemiologic influences.

85. **Antitoxin in Blood of Tetanus Convalescents.**—Löwy found no evidence of an antitoxin in the serum from 4 patients with tetanus (drawn before antitetanus serum had been injected), nor in 5 normal serums, but the tests were positive in the serum from 10 among 15 convalescents. Excluding the 5 whose serum reacted positively to horse precipitinogen, this leaves 5 with an unmistakable antitoxin content in their serum, capable of neutralizing the dose of toxin fatal for the mouse. This antitoxin does not last long; by the thirty-seventh day it failed to neutralize the toxin effectually and the mouse died. No connection between the antibody production and the course of the tetanus or location of the wound could be detected.

Gazzetta degli Ospedali e delle Cliniche, Milan

Nov. 18, 1915, XXXVI, No. 81, pp. 1265-1280

89 *Improved Technic for Differential Staining of Urine Sediment, etc. (Colorazione differenziale a fresco dei sedimenti orinari.) E. U. Fittipaldi.

November 21, No. 82, pp. 1281-1296

90 Symmetrical Spontaneous Gangrene of the Extremities. (Malattia di Raynaud.) G. De G. Giunta.

November 25, No. 83, pp. 1297-1312

91 *Industrial Accidents and Workman's Compensation. (Sugli infortuni del lavoro.) M. Zannini.

89. **Differential Stain for Urine Sediment.**—Fittipaldi has been studying to find differential stains that would act simultaneously. With the technics in vogue the various stains act at irregular intervals, which is apt to blur the conclusions from the findings. At first he used indulin with eosin, and obtained fairly satisfactory results. But the outcome is proving still better, he reports, with a triacid staining solution containing three stains, anilin blue w, aurantia, and eosin. The anilin blue w solution is made with 1 part of the stain, 90 parts distilled water and 10 parts alcohol; the aurantia solution with 0.2 parts aurantia, 90 parts distilled water and 10 parts alcohol; the eosin is used in a 1 per cent. distilled aqueous solution. The triple stain is prepared by mixing 20 parts of the eosin solution, 35 of the aurantia and 45 of the anilin blue solutions. The stain keeps well for months; only the eosin grows a little less active. This staining technic can be applied without heating to urine sediment, puncture fluids, sputum, tissue juices, blood, etc. A small amount of the stain is placed with a glass rod on the specimen to be examined. With the same rod a small drop of physiologic salt solution containing 2 per cent. acetic acid is stirred into the specimen on the slide. This decolors the vehicle while fixing the stain on the morphologic elements. The specimen is then slightly heated.

91. **Industrial Accidents.**—Zannini describes the features which distinguish an industrial accident from an occupational affection, but adds that the distinction in reality is artificial and only for business purposes. The industrial accident may be defined as any injury in the course of the day's work that could not have been foreseen at the time the workman assumed the work. He discusses further concomitant factors, saying that the workman on assuming the work is supposed to be free from defects and disability, but that this theoretical requirement is practically impossible of realization. Accidental dislocation of the patella, for example, requires a week's repose even if the dislocation has occurred at some time before, just as much as if this were the first time.

Brazil-Medico, Rio de Janeiro

Oct. 30, 1915, XXIX, No. 41, pp. 321-328

92 *Improved Technic for Staining Tubercle Bacilli. (Sobre um novo methodo de coloração do bacillo de Koch.) D. Cerqueira.

November 6, No. 42, pp. 329-334

93 *Leukemia a Mycosis. (Pesquizas etiologicas na leucemia. II.) E. Dias.

94 Tropical Bubo. (Bubão climatico.) F. Luz. Commenced in No. 41.

92. **Improved Technic for Staining Tubercle Bacilli.**—Cerqueira stains the specimen as usual with fuchsin, according to the usual technic, heating one minute, then decolors with nitric acid, ⅓%, and rinses in running water. Without drying, it is then treated with tincture of iodin for one minute and then rinsed. The specimen is then immersed in pure ammonia for a few seconds. The specimen is then rinsed in a 2 per thousand solution of sodium hyposulphite and dried slowly over an alcohol flame or Bunsen. The tubercle bacilli show up pale pink and the granulations are distinctly evident, stained a bluish violet. This technic also eliminates other germs which are susceptible to the destructive action of acid, alcohol or alkali. Another advantage of this technic is the pale tint of the background which throws the bacilli into better relief.

93. **Leukemia a Mycosis.**—Dias reports here another case of leukemia, the peripheral blood showing 648,000 leukocytes with positive findings in the blood and certain glands, confirming his conclusions from his two other cases that leukemia, of the myelogenous type, is the work of a fungus, a mycosis. He calls it the *Adenomyces leukemiae*. Laboratory animals injected with blood and lymph from his three patients all died, the pathologic findings being the same in all, and the more pronounced the longer the interval after the experimental inoculation.

Russkiy Vrach, Petrograd

Sept. 26, 1915, XIV, No. 39, pp. 913-936

95 *Serodiagnosis of Rabies. (Reaktzie Abderhaldeń'a pri bieshenstvie.) V. I. Nedrigailoff and M. A. Scheremezinskaia.

96 Syringomyelia with Acromegalic Changes, but without Actual Acromegaly. A. K. Schenk.

97 Dermoid of the Frontal Bone. M. O. Friedland.

98 *Symptoms and Treatment of Tetanus. (Stolbnyak.) Z. R. Feinman.

99 Action of Pointed Small Caliber Bullets as Observed during the Balkan War. N. I. Kochetoff.

95. **Protective Ferments in Diagnosis of Rabies.**—The blood was taken from diseased animals three or four hours before the institution of the experiments, from rabbits just before death, from dogs when the symptoms were at their height. The antigens were prepared from brain tissue of patients with rabies and of infected rabbits, dogs, a cow, calf and cat. The brain fat was removed with petroleum ether

in Soxhlet's apparatus. The results of the numerous experiments were as follows: (1) in rabid dogs protective ferments were found in the blood against antigens obtained from (*a*) brains of diseased and (*b*) healthy animals, and from the salivary glands of (*c*) rabid and (*d*) healthy dogs. 2. In diseased rabbits and men the same ferments were found except the ferment *d*. 3. In dogs infected with hydrophobia subdurally, in the eye, or in the sciatic nerve, ferments were detected as early as twenty-four or forty-eight hours, after the infection, against *a, b, c,* while ferment *d* was found only just before the development of the morbid symptoms. 4. In rabbits infected subdurally, ferments were found in their blood within twenty-four hours except the *d* variety. 5. The latter did not seem to develop in the patients given prophylactic treatment against hydrophobia, but ferments were found that digested brain tissue from rabid and healthy animals within twenty-four hours; those against salivary glands of mad dogs were found only for ten or twelve days after treatment. 6. Abderhalden's reaction may thus be of service not only for scientific research on rabies but also for diagnosis.

98. **Tetanus in the Russian Army.**—Of 66,110 wounded soldiers treated in the hospitals of Dvinsk during the first eleven months of the war, 95 (0.134 per cent.) suffered from tetanus. Feinman thinks this to be a rather low figure, as tetanus in other regions was more common among the wounded. It depends largely on the locality (of battles). Some battle grounds furnished no tetanus whatever; on others it was unusually frequent. Of the 95 tetanus patients, 74, that is, 78 per cent. died and 21 recovered. Parts covered gave tetanus 7½ times oftener than uncovered portions of the body, and shrapnel wounds twice as often as others. The incubation period was from five to thirty-eight days. Those that occurred during the first eight days gave 100 per cent. mortality. A bad omen was profuse sweating; in 22 per cent. the initial symptom was not trismus, but local spasms in the wounded arm, leg, abdominal muscles, etc., which frequently showed from one to seven days prior to the general convulsions. Of the 21 patients with local convulsions as an early sign, 17 died. The best symptomatic results were obtained with chloral hydrate, from 1 to 7 gm. daily given by the mouth or rectum. For spasmodic contracture of intestines and bladder hypodermic injection of from 0.5 to 1 gm. of a pituitary extract gave good results. Warm baths at 100 F. also proved effectual in symptomatic treatment. No benefit could be detected from treatment with antitetanus serum, intravenous or intraspinal; from 3 per cent. phenol solution; suspension of pigs' brains; calcium lactate three times daily in doses of 30 drops of a 10 per cent. solution, or from magnesium sulphate in hypodermic injections of from 2 to 14 c.c. of a 25 per cent. solution, or by intraspinal injection of 15 c.c. of a 10 per cent. solution.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

Oct. 30, 1915, II, No. 18, pp. 1991-2086

100 *Experimental Research on Localization of Sensory Functioning in the Brain. (Proefondervindelijke onderzoekingen over de localisatie der sensibiliteit in de schors der groote hersenen.) J. G. D. de Barenne.

101 Disappointing Experiences with Rosenbach's Tuberculin in Diagnosis and Treatment of Children. J. C. Schippers.

November 6, No. 19, pp. 2087-2178

102 The Straub-Hermann Biologic Reaction Not Specific for Morphin as Claimed. J. R. F. Rassers.

103 Advantages and Disadvantages of Roentgen Treatment of Uterine Fibromyomas. (De vrouw en het essentieel vrouwelijke bij de roentgenbehandeling van baarmoederfibromyomen.) N. Voorhoeve.

November 13, No. 20, pp. 2179-2270

104 The Conception of Space. (Zintuigen en ruimtevoorstelling.) T. E. Ter Kuile.

105 *Differential Diagnosis of Typhoid. E. P. Snijders. Commenced in No. 19.

106 Value of the Wassermann Reaction in Neurology and Psychiatry. T. Passtoors.

107 *Hypernephroma and Precocious Sexual Characters. (Hypernephroom-hypergenitalisme.) A. A. H. van den Bergh.

100. **Localization of Cerebral Function by Local Application of Strychnin to the Cortex.**—The report of De Barenne's research is to appear in full in the *Quarterly Journal of Experimental Physiology.* He here describes the remarkable crossed effect of application of a minute amount of strychnin to some spot on the cortex. He made thirty-four experiments, all on cats. The symptoms induced were exclusively sensory. For instance, application of the weak solution of strychnin to the left posterior sigmoid convolution apparently caused no disturbance for ten minutes; then the cat shook its right front paw and acted as if this paw hurt, and tests of this paw indicated unmistakable hyperesthesia and hyperalgesia, but there were no motor disturbances and no exaggeration of the reflexes. The left front paw also shared to a lesser extent in the sensory disturbances. This method of local strychninization of small areas in the cortex he thinks is liable to prove very useful in the study of cerebral sensory functioning.

105. **Differential Diagnosis of Typhoid.**—Snijders concludes his long study of the various newer differentiating measures in typhoid with the statements that agglutination is the most constant and bacteriemia the most reliable sign of typhoid known to date, but even these must be considered in relation to the clinical syndrome. The diagnosis of typhoid should never be based on the bacteriologic findings alone. Cultivation of the typhoid bacilli from the blood is extremely important for an early diagnosis. He declares that no typhoid patient should be let loose on society again without finding out whether he is a carrier or not. Examination of the urine for typhoid bacilli is of great epidemiologic importance, and every practitioner with very little trouble can obtain the information as to the positive or negative findings in the individual case. Snijders thinks there can be little doubt that, when typhoid bacilli are found persistently in the urine there must be some typhoid focus in the urogenital organs, and he appeals to urologists to pay special attention to this possibility. The bacilli are found most numerous in the excreta during the third week, as a rule, and the danger of infecting others would seem to be greatest at this time. Conradi and others have demonstrated, however, that the most contagious period is during the first and second week. The reason for this is one of the many still obscure points in our knowledge of this, the most intensively studied of all diseases. A number of dubious and clinically latent cases are described.

107. **Precocious Genital Development with Hypernephroma.**—Van den Bergh remarks that the time may not be far distant when surgeons will find it possible to remove successfully a tumor in the pineal gland and large hypernephromas, and hence clinicians must be studying the syndromes induced by such in order to diagnose them early enough for successful removal. He gives an illustrated description of a case of hypernephroma in a 3 year old girl with a large, hard, retroperitoneal tumor palpable in the left abdomen, which entailed fever and progressive weakness. The child was 4 or 5 inches taller than the average, and the general aspect suggested that of an adult, especially the external genital organs. The skin was normal as also the fundus and skull findings, and there was nothing to suggest precocious functioning of the sexual organs. On these findings a left hypernephroma was assumed and its removal attempted, although the dangers were realized. The tumor weighed 2,000 gm. and measured 22x16x12 and there seemed to be metastasis in the stump of one or more veins. The child bore the operation well at first but died the following night. He reviews the cases on record in which a malignant hypernephroma was accompanied by precocious development of the external genital organs, tabulating the details of eighteen, including his own case. The ages ranged from 14 months to 14 years, and in all but three of fifteen cases the tumor was on the left side. Two girls of nearly 5 and 9 are said to have had beards, and extreme obesity is mentioned in a number of the cases. He comments on the fact that of the eighteen cases, over one half were reported by English writers. The microscope shows the great difference between hypernephroma and sarcoma of the suprarenals. Neither the latter nor the Grawitz type of tumors in the kidney are ever accompanied by the changes in the secondary sexual characters observed with hypernephromas in children.

V. 191